STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
PACIFIC CASCADE REGION

LITTLE TIGER THINNING

ROAD PLAN

SECTION 2, 11, 12, 13, 14, 15, TOWNSHIP 03 NORTH, RANGE 06 EAST, W.M.
SECTION 7, 8, 17, 18, TOWNSHIP 03 NORTH, RANGE 07 EAST, W.M.
SKAMANIA COUNTY

YACOLT DISTRICT

AGREEMENT NO.: 30-078638 LEAD FORESTER: Jon Paul Anderson

DATE: 01/01/2006 STAFF ENGINEER: Jim English

DRAWN & COMPILED BY: Alicia Compton

SECTION 0 – SCOPE OF PROJECT

This project includes, but is not limited to construction and optional construction including:

clearing;
grubbing;
right-of-way debris disposal;
excavation and/or embankment to subgrade;
landing construction;
acquisition and installation of drainage structures;
acquisition, manufacture, and application of rock;
gridrolling;
road deactivation;
grass seeding.

This project also includes but is not limited to reconstruction and optional reconstruction including:

Road	Station (s)	Requirements
CG-2002 Ext	0+00 to 14+60	Grade and shape, apply 12-inch lift of PITRUN rock, and gridroll.
	0+08 to 0+48	Install 40-ft. portable Big R steel bridge. See Detail.
	1+72 to 14+60	Construct ditch. Install two cross drains.
CG-2050	MP 0.48 to 0.52	Cut and deck orange marked trees. Excavate cut bank to slope stakes and construct ditch to allow for Spur A transition from CG-2050. Apply 12-inch lift of PIT RUN rock and gridroll. Cap with 4-inch lift of 2½ INCH MINUS ROCK. End haul waste to area at MP 0.58.
	0+00 to 26+84	Begin reconstruction of abandoned road. Grade and shape, and construct ditches. Install five culverts as listed on CULVERT SHEET. Excavate as needed. Widen subgrade to the dimensions shown on the TYPICAL SECTION SHEET; clean all ditches; apply 12-inch lift of PIT RUN rock and gridroll. End haul waste to area at Station 0+00 (MP 1.14).
	6+79 to 8+04	Rock in cut bank to left, may need to drill and shoot, to widen subgrade.
	6+79 to 17+54	Reconstruct road template and endhaul waste material to waste area.
CG-2050A	0+00 to 23+14	Optional reconstruction. Grade and shape. Apply 6-inch lift of PIT RUN rock, and gridroll.

CG-2070	0+00 to 46+50	Grade, shape and pull ditches. Apply 10-inch lift of PIT RUN rock and gridroll.
	45+97	Install 96-in. x 50-ft. culvert; see Detail and timing restrictions in HPA.
CG-2070	46+50 to 93+16	Fill in waterbars. Grade, shape and pull ditches. Install culverts as shown on the CULVERT LIST. Begin 10-ft. running surface. Apply 10-inch lift of PITRUN rock, and gridroll.
	55+90	Install 30-in. x 50-ft. culvert.
CG-2070C	0+00 4+39	Fill in waterbars. Grade, shape and pull ditches. Install culverts as shown on the CULVERT LIST. Apply 12-inch lift of PITRUN rock, and gridroll.
CG-2071	0+00 to 44+06	Fill in tank trap and waterbars. Grade, shape and pull ditches. Install culverts as shown on the CULVERT LIST. Apply 12-inch lift of PITRUN rock, and gridroll.
	0+00 to 5+78	Excavate to slope stakes where staked.
	5+20 to 5+70	Install 54-ft. portable Big R steel bridge, see detail.
CG-2072	0+00 to 5+72	Grade and shape. Outslope and apply an 8-inch lift of PIT RUN rock and gridroll.
CG-2080	0+00 to 59+53	Grade and shape, light grubbing, and construct or pull ditches. Install culverts as shown on the CULVERT LIST. End haul excess material to waste area. Apply 8-inch lift of PIT RUN rock and gridroll.
	0+51	Install 42-in. x 42-ft. temporary culvert in Type 3 Stream, see timing restrictions in HPA.
	0+51 to 4+06	Old road grade washed out in places, and will need fill to reconstruct subgrade.
	4+06	Install 24-in. x 50-ft. culvert.
	5+35	Install 42-in. x 42-ft. temporary culvert in Type 3 Stream, see timing restrictions in HPA.
	14+74	Install 24-in. x 70-ft. culvert and 10-ft flume.
CG-2080A	0+00 to 7+78	Fill in waterbars. Grade, shape and pull ditches. Install
CG-2080D	0+00 to 3+40	culverts as shown on the CULVERT LIST. Apply 12-inch lift of PITRUN rock, and gridroll.
CG-2090	0+00 to 13+97	Grade and shape. Apply 12-inch lift of PIT RUN and gridroll.
	1+97	Type 5 stream, install 36-in. x 40-ft. culvert.
	5+39	Type 5 stream, install 30-in. x 90-ft. culvert.
	9+00	Install 18-in. x 30-ft. cmp.

This project also includes but is not limited to pre-haul maintenance including:

Road	Station (s)	Requirements
CG-2002	MP 0.0 to MP 0.54	Grade and shape.
CG-2050	MP 0.0 to MP 1.14	Grade and shape.
CG-2060	MP 0.0 to MP 0.45	Grade and shape.
CG-2070	MP 0.0 to MP 0.5	Grade and shape.
CG-2080	MP 0.0 to MP 0.62	Grade and shape. Apply 6-inch lift of PIT RUN rock and gridroll.
CG-2090	MP 0.0 to MP 1.8	Grade, shape, and gridroll. Rock Pit at MP 0.20.
	MP 0.8 to MP 1.8	Apply 6-inch lift of PIT RUN rock. Clean and pull ditches.

This project also includes but is not limited to abandonment including:

light abandonment;
medium abandonment.

SECTION 1 - GENERAL CLAUSES

1.1-1

Clauses in this plan apply to all construction, reconstruction, pre-haul maintenance, or abandonment including landings unless otherwise noted.

1.1-2

Reconstruction or pre-haul maintenance of the following roads is required. All roads shall be reconstructed or pre-haul maintained on the State's location and in accordance with this Road Plan.

Road	Stations	Type
CG-2002	MP 0.0 to MP 0.54	Pre-haul maintenance
CG-2002 Ext	0+00 to 14+60	Reconstruction
CG-2050	MP 0.0 to MP 0.48	Pre-haul maintenance
	MP 0.48 to MP 0.52	Reconstruction
	MP 0.52 to MP 1.14	Pre-haul maintenance
	0+00 to 26+84	Reconstruction
CG-2060	MP 0.00 to MP 0.45	Pre-haul maintenance
CG-2070	MP 0.0 to MP 0.5	Pre-haul maintenance
	0+00 to 93+16	Reconstruction
CG-2071	0+00 to 44+06	Reconstruction
CG-2072	0+00 to 5+72	Reconstruction
CG-2080	MP 0.0 to MP 0.62	Pre-haul maintenance
	0+00 to 59+53	Reconstruction
CG-2090	MP 0.0 to MP 1.8	Pre-haul maintenance
	0+00 to 13+77	Reconstruction

1.1-3

Construction or reconstruction of the following roads is not required. Roads used by the Purchaser shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.

Road	Stations	Type
CG-2002A	0+00 to 12+91	Construction
Spur A	0+00 to 12+35	Construction
CG 2050A	0+00 to 23+14	Reconstruction
CG-2050B	0+00 to 6+79	Construction
CG-2050C	0+00 to 2+17	Construction
Spur B	0+00 to 14+34	Construction
CG 2070C	0+00 to 4+39	Reconstruction
	4+39 to 7+21	Construction
CG 2070D	0+00 to 5+67	Construction
CG-2071	44+06 to 60+97	Construction
CG-2071E	0+00 to 3+74	Construction
CG-2071F	0+00 to 10+70	Construction
CG-2071G	0+00 to 3+18	Construction
CG-2080A	0+00 to 7+78	Reconstruction
CG-2080B	0+00 to 16+06	Construction
CG 2080C	0+00 to 7+49	Construction
CG 2080D	0+00 to 3+40	Reconstruction
	3+40 to 21+85	Construction
CG 2080E	0+00 to 4+32	Construction
CG 2080 F	0+00 to 1+73	Construction
CG 2080 G	0+00 to 6+18	Construction
CG 2090 A	0+00 to 19+51	Construction
CG 2090 B	0+00 to 3+28	Construction

1.1-4

If the Purchaser desires a road location or design change, a revised Road Plan shall be submitted to the State for consideration.

1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to: solid subsurface rock, subsurface springs, saturated ground, and unstable soil.

1.1-7

Hauling of forest products or equipment may require a county road hauling permit. Purchaser is responsible for obtaining a permit, and any costs associated with extra maintenance or repair levied by a county.

1.1-10

Abandonment of the following roads is required. All roads shall be abandoned in accordance with this Road Plan.

Road	Stations	Type
CG-2002A	0+00 to 12+91	Light
Spur A	0+00 to 12+35	Medium
CG-2050A	0+00 to 23+14	Light
CG-2050B	0+00 to 6+79	Light
CG-2050C	0+00 to 2+17	Light
Spur B	0+00 to 14+34	Light
CG-2070C	0+00 to 7+21	Light
CG-2070D	0+00 to 5+67	Light
CG-2071	44+06 to 60+97	Light
CG-2071E	0+00 to 3+74	Light
CG-2071F	0+00 to 10+70	Light
CG-2071G	0+00 to 3+18	Light
CG-2080A	0+00 to 7+78	Light
CG-2080B	0+00 to 16+06	Medium
CG-2080C	0+00 to 7+49	Medium
CG-2080D	0+00 to 21+85	Light
CG 2080E	0+00 to 4+32	Medium
CG 2080F	0+00 to 1+73	Medium
CG 2080G	0+00 to 6+18	Light
CG-2090A	0+00 to 19+51	Medium
CG-2090B	0+00 to 3+28	Medium

1.2-1

The construction or reconstruction of any roads specified herein shall not be permitted between November 1 and April 15 unless authority to do so is granted, in writing, by the Contract Administrator.

1.2-2

Purchaser shall not use roads constructed, reconstructed, or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1.2-4

On the following roads, construction shall not be permitted between March 1 and August 31.

Road	Stations
CG-2050B	5+08 to 7+21
CG-2050C	0+89 to 2+17

1.2-6

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground. Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches, and culvert installations shall be completed and are subject to written approval by the Contract Administrator prior to rock application.

1.3-2

Hauling shall be suspended when wheel track rutting exceeds 6 inches unless Purchaser elects to correct the situation at his/her own expense. Corrective measures and continued operations are subject to written approval by the Contract Administrator.

1.4-2

The following roads shall be constructed or reconstructed in accordance with construction stakes.

Road	Stations
CG-2002 Ext.	0+00 to 0+54
Spur A	0+00 to 12+35
Spur B	0+00 to 5+70
CG-2050	MP 0.48 to MP 0.52
CG-2050	0+00 to 26+84
CG -2070	45+56 to 46+37
CG-2071	4+68 to 6+02
CG-2080B	0+00 to 16+06
CG-2080C	0+00 to 7+49
CG-2080D	0+00 to 21+85
CG-2090A	0+00 to 19+51
CG-2090B	0+00 to 3+28

1.4-3

Reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.

1.5-1

Maintenance on roads listed in Contract Clauses C-50 (Purchaser Road Maintenance and Repair) and C-60 (Designated Road Maintainer) shall be performed in accordance with Forest Access Road Maintenance Specifications.

1.5-3

Snowplowing will be permitted only after execution of a “Snow Plowing Agreement”, which is available from the Contract Administrator upon request.

SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 6 inches DBH or over 12 feet high between the marked right-of-way boundaries or if not marked in the field, between clearing limits specified on TYPICAL SECTION SHEET.

2.1-2

Deck all merchantable right-of-way timber. The decks shall be parallel to the road centerline and within the cleared right-of-way. The decks shall be free of dirt, limbs and other right-of-way debris, and removable by standard log loading equipment from the roadbed.

2.1-3

Right-of-way timber shall not be decked within the grubbing limits or in locations that interfere with the construction of the road prism or impede drainage.

SECTION 3 - GRUBBING

3-1

All stumps shall be removed that fall between grubbing limits shown on the TYPICAL SECTION SHEET. Those outside the grubbing limits but with undercut roots shall also be removed.

3-2

Grubbing limits are defined as the entire area between the external limits shown on the TYPICAL SECTION SHEET.

3-5

Organic material shall be excluded from the road subgrade width as shown in TYPICAL SECTION SHEET.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume within the grubbing limits.

4.1-2

All right-of-way debris disposal shall be completed prior to the application of rock and/or timber haul.

4.2.3-1

Right-of-way debris shall be scattered outside the grubbing limits.

4.2.3-2

Right-of-way debris shall not be placed against standing timber.

SECTION 5 - EXCAVATION

5.1-1

Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed or reconstructed in accordance with dimensions shown on the TYPICAL SECTION SHEET.

5.1-2

Purchaser shall not bury merchantable material.

5.1-3

Road grade and alignment shall conform to the State's marked location. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are 18 percent favorable and 13 percent adverse or as specified on drawings. Minimum radius curve is 60 feet.

Changes in road grade shall not exceed 6% within 100 feet. Favorable grades through switchbacks shall not exceed 14%. Transition grades entering and leaving switchbacks shall not exceed a 6% grade change.

A switchback is defined as a curved segment of road between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

5.1-4

Minimum extra widening on the inside of curves shall be:

5 feet extra	80 to 100 foot radius curve
7 feet extra	60 to 80 foot radius curve

5.1-5

Curve widening, where required, shall be added to the inside of curves.

5.1-7

Roads shall be constructed or reconstructed to the dimensions shown on the TYPICAL SECTION SHEET, within the tolerance listed below. Tolerance classes for each road are listed on the TYPICAL SECTION SHEET.

Tolerance Class	A	B	C
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8

Excavation slopes shall be constructed no steeper than shown on the following table except as construction staked or designed:

Material Type	Excavation Slope Ratio
Common Earth (on side slopes of 55%)	1:1
Common Earth (55% to 70% sideslopes)	¾:1
Common Earth (on slopes over 70%)	½:1
Fractured or loose rock	½:1
Hardpan or solid rock	¼:1

5.1-9

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10

Embankments shall be widened as follows:

Height at Centerline	Subgrade Widening
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11

Embankment slopes shall be constructed no steeper than shown on the following table except as construction staked or designed:

Material Type	Embankment Slope Ratio
Common Earth and Rounded Gravel	1½:1
Angular Rock	1¼:1
Sandy Soils	2:1

5.1-12

Organic material shall be excluded from embankment.

5.1-14

Where side slopes exceed 45 percent, full bench construction shall be utilized for the entire subgrade width.

5.1-16

Turnout locations noted on this plan are approximate. Locations shall be adjusted to fit with final subgrade alignment and sight distances. Location shall be subject to written approval of the Contract Administrator.

5.1-17

Turnouts shall be intervisible with a maximum of 1,000 feet between turnouts unless shown otherwise on drawings. Location shall be subject to written approval of the Contract Administrator.

5.1-18

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Location shall be subject to written approval of the Contract Administrator.

5.1-20

Purchaser shall construct ditches and reconstruct excavation slopes to provide sufficient width for ditches and road surface. Excavated slopes shall be consistent with Clause 5.1-8. Excavated material shall be scattered outside the grubbing limits or end hauled to designated waste areas.

5.1.1-1

Waste material shall not be deposited within 50 feet of a cross drain culvert installation.

5.1.1-2

Waste material shall not be deposited within 100 feet of a live stream.

5.1.1-3

Waste material may be deposited adjacent to the road prism on side slopes up to 45 percent if the waste material is compacted and more than 100 feet away from live streams. On side slopes of 45 percent or more, all excavation shall be end hauled or pushed to designated embankment sites.

5.1.1-6

On the following roads, full bench construction shall be utilized on side slopes greater than 45 percent with all excess excavated material end hauled or pushed to designated waste areas.

End Haul/Waste Material Disposal

Road	Stations	Waste Area Location	Remarks
CG-2050	MP 0.48 to MP 0.52	MP 0.58 CG-2050 Rd	Designated area.
Spur A	0+00 to 12+35	MP 0.58 CG-2050 Rd	Designated area.
CG-2050	0+00 to 23+44	MP 1.14 CG-2050 Rd	Designated area.
CG-2080B	0+00 to 16+06	Station 0+00	As directed by C.A.
CG-2080C	0+00 to 7+49	Sta 1+00 to 2+18	Adjacent to road prism.
CG-2080D	0+00 to 21+85	Sta 3+40	Adjacent to road prism.
CG-2090A	0+00 to 19+51	Sta 2+18 to 2+98	As directed by C.A.
CG-2090B	0+00 to 3+28	Sta 0+00	As directed by C.A.

5.1.1-8

The amount of material to be contained in a waste area shall be at the discretion of the Contract Administrator.

5.2-1

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the clearing limits, or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts. Side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

5.3-2

All embankment deeper than 5 feet at the road shoulder shall be compacted full width in 1 foot lifts by four coverages with a vibratory drum roller weighing at least 14,000 pounds at a maximum operating speed of 5 mph. Shall be compacted full width except ditch prior to rock application. Compaction shall consist of soils being compacted to ninety five percent (95%) of the maximum density for the material.

5.4-1

Silt-bearing runoff shall not be permitted to go into streams.

5.4-2

On all roads, accomplish sediment removal through silt traps, silt fences, settling ponds, or other methods as approved, in writing, by the Contract Administrator.

5.4-3.1

Purchaser shall furnish and evenly spread the seed mixture listed below on all exposed soil inside the grubbing limits at a rate of 40 pounds per acre. The date of application is subject to approval by the Contract Administrator. Fertilizer shall be applied at a rate of 100 pounds per acre. Fertilizer shall consist of 16-16-16 or other balanced mix as approved by the contract administrator.

Mixture Percent by Weight	Minimum Percent Germination
50% Fescue, Red	90% Germination
25% Ryegrass, Perennial	90% Germination
15% Bentgrass	85% Germination
10% Clover, White and White Dutch (inoculated)	90% Germination

Weed seed shall not exceed 0.5% by weight.

Seed shall be furnished in standard containers on which the following shall be shown:

1. Common name of seed
2. Net weight
3. Percent of purity
4. Percentage of germination
5. Percentage of weed seed and inert material

Required seed not spread by the termination of this contract shall become property of the State. The amount owed to the State shall be as follows, less the amount spread.

Road	Stations	Seed Quantity (lbs)	Fertilizer Quantity (lbs)
CG-2050	0+00 to 26+84	25	62
CG-2050	MP 0.48 to MP 0.52	10	25
CG-2070	0+00 to 93+16	86	214
CG-2071	0+00 to 60+97	56	140
CG-2080	0+00 to 59+53	55	137
CG-2090	0+00 to 13+77	25	63
CG-2002 Ext	0+00 to 14+60	13	33
CG-2002A	0+00 to 12+91	47	118
Spur A	0+00 to 12+35	45	113
CG 2050A	0+00 to 23+14	21	52
CG-2050B	0+00 to 6+79	25	62
CG-2050C	0+00 to 2+17	8	20
Spur B	0+00 to 14+34	53	132
CG 2070C	0+00 to 7+21	18	46
CG 2070D	0+00 to 5+67	21	52
CG-2071E	0+00 to 3+74	14	34
CG-2071F	0+00 to 10+70	39	98
CG-2071G	0+00 to 3+18	12	29
CG-2080A	0+00 to 7+78	14	36
CG-2080B	0+00 to 16+06	59	147
CG 2080C	0+00 to 7+49	28	69
CG 2080D	0+00 to 21+85	74	185
CG 2080E	0+00 to 4+32	16	40
CG 2080 F	0+00 to 1+73	6	15
CG 2080 G	0+00 to 6+18	23	57
CG 2090 A	0+00 to 19+51	72	179
CG 2090 B	0+00 to 3+28	12	30

5.5-5

Finished subgrade shall be crowned or outsloped as shown on the TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

5.5-6

On the following roads, a grader shall be used to shape the existing surface and the surface shall be compacted full width except ditch. Compaction shall be by a vibratory roller weighing at least 14,000 pounds. Six complete passes shall be made at a maximum operating speed of 3 mph.

Road	Stations
CG-2002	MP 0.0 to 0.54
CG-2050	MP 0.0 to 1.14
CG-2060	MP 0.0 to 0.45
CG-2070	MP 0.0 to 0.5
CG-2080	MP 0.0 to 0.62
CG-2090	MP 0.0 to 1.8

SECTION 6 - DRAINAGE

6.1-1

On the following road, road surfaces shall be outsloped at 6 inches in 10 feet.

Road	Stations
CG-2072	0+00 to 5+72

6.2.1-1

Purchaser shall furnish, install, and maintain galvanized culverts (AASHTO Specification No. M-36) or corrugated polyethylene pipe (AASHTO specification No. M-294 Type S) as designated on the CULVERT LIST. Culvert and flume lengths shall be varied to fit as-built conditions subject to written approval by the Contract Administrator.

6.2.1-2

Annular corrugated bands and culvert ends shall be used on metal culverts. On culverts 24 inches and smaller, bands shall have a minimum width of 12 inches, on culverts over 24 inches, bands shall have a minimum width of 24 inches. Manufacturer's approved connectors shall be used for corrugated polyethylene pipe.

6.2.1-5

On required roads: culverts, downspouts, flumes, bands, and gaskets as listed on the CULVERT LIST which are not installed shall become property of the State.

6.2.1-6

Metal, concrete, or plastic culverts and bands removed from the roadbed.

6.2.1-7

On the following roads, installation of culverts and bridges shall be in accordance with Hydraulics Project Approval and CULVERT INSTALLATION DETAIL, and BRIDGE INSTALLATION DETAIL.
The installation or construction within the 100-yr flow widths stream crossings specified herein shall not be permitted between October 15 and July 1 unless authority to do so is granted, in writing, by the Contract Administrator.

Road	Stations
Spur B	2+01
CG-2070	45+97
CG-2002 Ext.	0+08 to 0+48
CG-2071	5+24 to 5+78
CG-2080	0+51 and 5+35

6.2.2.1-1

Culvert, downspout, flume, and energy dissipator installation shall be in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL and the National Corrugated Metal Pipe Association "Installation Manual for Corrugated Steel Drainage Structures"

6.2.2.1-2

Purchaser shall provide rubberized gaskets for all culverts with a vertical rise greater than 42 inches.

6.2.2.2-1

Any damaged galvanized coating or cut ends shall be retreated with a minimum of 2 coats of zinc rich paint.

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low points of dips in roads shall not be skewed.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% nor more than 10%.

6.2.2.4-1

Installations of culverts 36 inches in diameter and over shall be subject to written approval by the Contract Administrator prior to making backfill.

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes, and energy dissipators shall be installed to prevent erosion.

6.2.2.5-2

Downspouts and flumes longer than 10 feet shall be staked on both sides at maximum intervals of 10 feet with 6-foot heavy-duty steel posts, and fastened securely to the posts with No. 10 galvanized smooth wire or 2 inch bolts in accordance with CULVERT AND DRAINAGE SPECIFICATIONS DETAIL.

6.3-1

Ditches shall be constructed concurrently with construction of the subgrade. Ditches shall drain to culverts, ditchouts, and natural drainages.

6.4-1

Catch basins shall be constructed to resist erosion in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

6.5-1

Headwalls shall be constructed in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts.

6.5-2

Embankment slopes adjacent to culvert inlets and outlets at live stream crossings shall be armored with machine placed light loose riprap for a distance of one culvert diameter on each side of the pipe and one culvert diameter above the pipe in accordance with the CULVERT LIST.

SECTION 7 - ROCK

7.1-1

Rock for construction, reconstruction, and pre-haul maintenance under this contract may be obtained from sources on State land as listed below at no charge to the Purchaser. Development and use shall be in accordance with the attached written "Development Plan" prepared by the State. Upon completion of operations, the rock source shall be left in the condition specified in said plan, subject to approval by the Contract Administrator. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using or desire to use these rock sources, a joint operating plans shall be developed. All parties shall follow these plans. The Purchaser shall give the Contract Administrator five days notice prior to commencing any operations in the listed rock pits.

Source	Location
1. CG-2002 Rock Pit	SW ¼ of Sec. 12, T3N R6E, W.M.
2. CG-2060 Stockpile	SE ¼ of Sec. 12, T3N R6E, W.M.
3. CG-2080 Rock Pit	NE ¼ of Sec. 14, T3N R6E, W.M.
4. CG-2090 Rock Pit	NW ¼ of Sec. 15, T3N R6E, W.M.

7.1-3

All rock source operations shall be conducted as directed by the Contract Administrator.

7.1-4

Crushed rock required for construction or specified in the ROCK LIST under this contract may be obtained from an existing stockpile on State land as listed below at no charge to the Purchaser. Purchaser shall remove no more than 150 cubic yards of 2½ INCH MINUS CRUSHED rock.

Source	Location
CG-2060 Stockpile	SE ¼ of Sec. 12, T3N R6E, W.M.

7.1-6

Rock for construction, reconstruction, or pre-haul maintenance under this contract may be obtained from any commercial source as approved in writing by the Contract Administrator.

7.2.1.1-5

2½ INCH MINUS CRUSHED ROCK

% passing 2½" square sieve	100%
% passing 2" square sieve	65 -100%
% passing 1" square sieve	50 - 70%
% passing ¼" square sieve	30 - 50%
% passing U.S. #40 sieve	16% Max.
% passing U.S. #200 sieve	5% Max.

All percentages are by weight.

7.2.1.1-15

STREAM MATERIAL

% Less then 42"	100%
% passing 24" square sieve	90% Max.
% passing 12" square sieve	70% Max.
% passing 8" square sieve	50% Max.
% passing 2 ½" sieve	16% Max.
% passing ¾" sieve	5 - 10%.
% passing U.S. #4 sieve	5 - 10%.
% passing U.S. #200 sieve	5% Max.

All percentages are by weight.

7.2.1.2-2

PIT RUN rock shall contain no more than 5 percent by weight of vegetative debris, dirt, or trash. PIT RUN rock will meet the following specifications for rock gradation when placed on the subgrade: No more than 10% of the rock shall be larger than 8 inches in any dimension and no rock shall be larger than 12 inches in any dimension.

7.2.3-1

Measurement of the 2½ INCH MINUS rock shall be on a cubic yard truck measure basis. Each truck box shall be measured by the Contract Administrator prior to rock hauling. The Contract Administrator shall periodically require that a load be flattened off and its volume calculated. An average of such volumes for each truck shall be used to tally the volume to be hauled. The Purchaser shall provide and maintain load tally sheets for each truck and shall give them to the Contract Administrator upon request.

7.2.4-1

Rock drilling and shooting shall meet the following specifications:

a. Oversize material remaining in the rock source at the conclusion of the timber sale shall not exceed 10 percent of the total volume mined for the sale.

b. Oversize material is defined as rock fragments larger than two feet in any dimension.

c. The Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator ten working days prior to any drilling. (Form #M-126PAC).

7.4.2-1

Apply at least the minimum required rock quantity as shown on the ROCK LIST. Required and optional rock shall meet the specifications on the ROCK LIST.

7.4.2-4

On the following roads, if hauling shall take place only from June 1 to September 30, Purchaser may not be required to place or provide the optional rock in the ROCK LIST. Purchaser shall then be required to submit a written plan for approval by the Contract Administrator describing how these roads shall be constructed, used, and abandoned in compliance with all other clauses in the ROAD PLAN.

Road	Stations
CG-2002A	0+00 to 12+91
Spur A	3+00 to 12+35
CG-2050A	0+00 to 23+14
CG-2050B	0+00 to 6+79
CG-2050C	0+00 to 2+17
Spur B	3+33 to 14+34
CG-2070C	0+00 to 7+21
CG-2070D	0+00 to 5+67
CG-2071E	0+00 to 3+74
CG-2071F	0+00 to 10+70
CG-2071G	0+00 to 3+18
CG-2080A	0+00 to 7+78
CG-2080B	0+00 to 16+06
CG-2080C	0+00 to 7+49
CG-2080D	0+00 to 21+85
CG 2080E	0+00 to 4+32
CG 2080F	0+00 to 1+73
CG 2080G	0+00 to 6+18
CG-2090A	0+00 to 19+51
CG-2090B	0+00 to 3+28

7.4.2-5

Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.

7.4.2-6

On the following roads, a grader shall be used to shape the subgrade or existing surface prior to the application of rock.

Road	Stations
CG-2070	0+00 to 93+16
CG-2071	0+00 to 44+06
CG-2080	MP 0.00 to MP 0.62
CG-2090	MP 0.80 to MP 1.80

7.4.2-9

Turnarounds, turnouts, and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-10

Each lift of rock shall be crowned as shown on TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

7.4.2-11

On the following roads, Purchaser shall spot patch or apply rock as directed by the Contract Administrator in accordance with quantities shown on ROCK LIST.

Road	Stations
CG-2080	MP 0.00 to MP 0.62
CG-2090	MP 0.80 to MP 1.80

7.4.3-5

On all roads, compaction shall be by vibratory grid roller (Elliot grid meets this specification) weighing at least 20,000 pounds. At least six complete passes at a maximum speed of 5 mph shall be made.

7.4.4-1

Riprap shall consist of angular stone, placed on as indicated in this plan, or as shown on the TYPICAL SECTION SHEET or as directed by the Contract Administrator.

Loose Riprap - The stone for loose riprap shall be hard, sound and durable. It shall be free from segregation, seams, cracks, and other defects tending to destroy its resistance to weather. Loose riprap shall be free of rock fines, soil, or other extraneous material.

a. Heavy Loose Riprap - Shall meet the following requirements for grading:

At Least/Not More Than	Minimum Size	Maximum Size
40% / 90%	1 Ton (2 cu. yd.)	--
70% / 90%	300 lbs. (2 cu. ft.)	--
10% / 30%	--	50 lbs.

b. Light Loose Riprap - Shall meet the following requirements for grading:

At Least/Not More Than	Size Range	Maximum Size
20% / 90%	300 lbs. to 1 ton	--
80% / --	50 lbs. to 1 ton	--
10% / 20%	--	50 lbs.

7.4.4-2

Riprap shall be set in place in conjunction with or immediately following construction of the embankment. Placement shall be by zero drop height methods only.

SECTION 8 - STRUCTURES

8.2.1

a. Metal tracked equipment shall not be used on any bridge surfaces at any time. If equipment must be run on the bridge surface during construction, then rubber tired equipment or other methods as approved in writing by Contract Administrator shall be used.

b. Any dirt, rock, or other material tracked or spilled on the bridge surface shall be removed immediately. Any damage to the bridge structure shall be repaired at the Purchaser's expense as directed by the Contract Administrator.

8.3-1

The Purchaser shall construct each bridge or structure listed below in accordance with this plan.

Road	Station	Bridge/Structure	Type
CG-2002 Ext.	0+08 to 0+48	40 ft x 16 ft	Steel Portable
CG-2071	5+24 to 5+78	54 ft x 16 ft	Steel Portable

8.3-2

Bridges listed below are the property of the State and shall be installed by the purchaser according to the installation details and manufacturers specifications. Purchaser is responsible for loading, transporting, and subsequent installation of the bridges. The purchaser is responsible for any damage incurred during loading, transport, unloading, or use of the bridges.
The Contract Administrator shall approve in writing that all elements of each of the following construction stages are in conformance with the design before allowing construction to continue on to the next stage.

a. construction staking of design and verification of elevation
b. excavation to suitable bearing capacity
c. placement and compaction of fill material
d. construction of forms and rebar/ironwork
e. pouring of concrete
f. placement of precast footings/sills/abutments
g. placement of superstructure

Purchaser shall provide the State with a production schedule showing projected completion dates of the above items prior to commencing construction of this structure.

Concrete test cylinders shall be taken by the Purchaser for the purpose of checking actual strength of the concrete against the design strength. Also, concrete test cylinders may be taken by the State from various concrete pours as deemed necessary.

Road	Station	Length	Loading	W.B.W.G.*	Vert.Clear*	Hor. Align
CG-2002 Ext.	0+20 to 0+50	40.0’	U-80/L-90	14.0’	3.0’	P.P.
CG-2071	5+18 to 5+68	54.0”	HS-30	14.0’	5.5’	P.P.

*W.B.W.G. = Width between wheel guards
*Vertical clearance shall be measured from 100-year flood level.
P.P. = On the attached plan/profile
C.S. = According to construction stakes on the ground.

8.3-2.1

Steel bridges shall meet the following specifications:

A 16-ft x 40-ft Big R Steel Portable Bridge for use on the CG-2002 Road is available at the Chehalis Work Center Yard, 1405 Rush road, Chehalis WA, 98532.

An existing 16-ft x 54-ft Big R Steel Portable Bridge for use on the CG-2071 Road, is located on the G-100 Road. Directions from Battleground: Head north on SR-503 6 miles, turn right on Gabriel Road for 0.3 miles, left onto G-100 Road 0.05 miles to gate, (786 Master key), continue through gate 0.35 miles, left at junction for 0.3 miles to bridge. Legal location: NW ¼ of NE ¼ of Section 36, T5N R2E, W.M. Approximate ½ bridge weight is 26,300lbs. A crane will be needed to remove and load the bridge.

Original Big R bridge design sheets and specifications available upon request.

Elastomeric bearing pads shall be used and shall be in accordance with bridge manufacturers specifications.

Purchaser will be responsible for damage occurring during loading, transporting, or unloading.

All galvanizing associated with this project shall be in accordance with AASHTO M 111-80 AND/OR AASHTO M 232-84 and/or AASHTO M298-85.

Wingwalls shall match slope and elevation of the top of the endwalls and be butted against the endwalls to retain fill material within the abutment. Wingwalls and endwalls shall be constructed such that no embankment fill encroaches any closer to the stream than the 100-year flood plain.

Backwalls and Sills for the CG-2002 Road Bridge shall be constructed of sound Douglas fir logs shown on the Log Sill Detail. Logs sill must have a minimum small end diameter of 24 inches.

Backwalls for the CG-2071 road Bridge shall be constructed of 4-inch x 10-inch planks as shown on the Backwall Detail. All backwall material shall be No. 2 or better Douglas fir.

Abutments or sills for the CG-2071 Road Bridge shall be constructed of reinforced concrete, constructed as shown on the Footing Detail.

Road approach grades from the finished ends of the CG-2002 bridge shall be no greater than 3 percent for at least 30 feet and make a smooth transition with the continuing road.
Road approach grades from the finished ends of the CG-2071 bridge shall be no greater than 2 percent for at least 30 feet and make a smooth transition with the continuing road.

SECTION 9 - ROAD AND LANDING DEACTIVATION

9.1-1

The following roads shall be deactivated by the Purchaser prior to the termination of this contract.

Road	Stations
CG-2002 Ext	0+00 to 14+60
CG-2050	0+00 to 26+84

9.1-2

Deactivation shall consist of:

constructing drivable water bars in conformance with the attached WATER BAR DETAILS at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 200 feet;

skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade;

keying water bars into ditchline;

grass seeding, concurrently with deactivation and in accordance with clause 5.4-3.1.

covering, concurrently with deactivation, all exposed soils within 100 feet of any live stream, with an 8-inch deep layer of straw;

water bar immediately upslope of culvert.

9.2-1

Purchaser shall reduce or relocate landing debris, in a manner approved, in writing, by the Contract Administrator, to avoid landing failures and potential debris slides.

9.2-2

Purchaser shall provide for drainage of the landing surface as approved, in writing, by the Contract Administrator.

9.2-3

Landing embankments shall be sloped to original construction specifications.

SECTION 10 - ROAD AND LANDING ABANDONMENT

10.1-1

The following roads shall be abandoned by the Purchaser prior to the termination of this contract and according to the ROAD ABANDONMENT CROSS SECTIONS DETAIL.

Road	Stations	Type
CG-2002A	0+00 to 12+91	Light
Spur A	0+00 to 12+35	Medium
CG-2050A	0+00 to 23+14	Light
CG-2050B	0+00 to 6+79	Light
CG-2050C	0+00 to 2+17	Light
Spur B	0+00 to 14+34	Light
CG-2070C	0+00 to 7+21	Light
CG-2070D	0+00 to 5+67	Light
CG-2071	44+06 to 60+97	Light
CG-2071E	0+00 to 3+74	Light
CG-2071F	0+00 to 10+70	Light
CG-2071G	0+00 to 3+18	Light
CG-2080A	0+00 to 7+78	Light
CG-2080B	0+00 to 16+06	Medium
CG-2080C	0+00 to 7+49	Medium
CG-2080D	0+00 to 21+85	Light
CG 2080E	0+00 to 4+32	Medium
CG 2080F	0+00 to 1+73	Light
CG 2080G	0+00 to 6+18	Light
CG-2090A	0+00 to 19+51	Medium
CG-2090B	0+00 to 3+28	Medium

10.1-2

Light Abandonment shall consist of:

constructing non-drivable water bars in conformance with the attached WATER BAR DETAILS at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 100 feet; or as marked in the field;
skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade;
keying water bars into ditchline;
construction of tank trap barriers in conformance with the attached "T" TANK TRAP DETAIL;
removing culverts from State Land;
removing ditch cross drain culverts and leaving the resulting trench open;
sloping all trench walls and approach embankments no steeper than 1.5:1;
grass seeding concurrently with abandonment and in accordance with Clause: 5.4-3.1;
covering, concurrently with abandonment, all exposed soils within 100 feet of any live stream, with an 8-inch deep layer of straw;
scatter woody debris onto abandoned road surfaces.

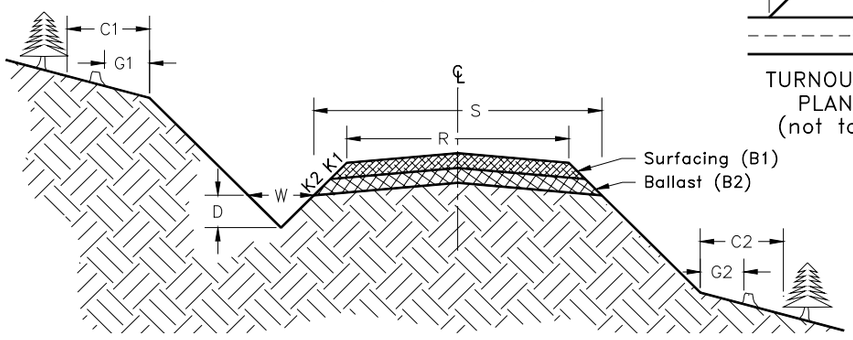
10.1-3

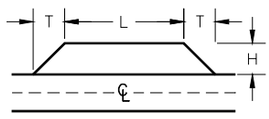
Medium Abandonment shall consist of:

filling the ditches;
ripping the surface to a minimum depth of 10 inches;
outsloping the surface at a minimum of 30%;
removing embankments, sidecast fill, and placing material into cutbanks and shaping banks to conform with the natural ground;
constructing non-drivable water bars in conformance with the attached WATER BAR DETAILS at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 100 feet, or as marked in the field;
skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade;
keying water bars into ditchline;
construction of tank trap barriers in conformance with the attached "T" TANK TRAP DETAIL;
removing culverts from State Land;
removing ditch cross drain culverts and leaving the resulting trench open;
sloping all trench walls and approach embankments no steeper than 1.5:1;
grass seeding concurrently with abandonment and in accordance with Clause: 5.4-3.1;
covering, concurrently with abandonment, all exposed soils within 100 feet of any live stream, with an 8-inch deep layer of straw. Scatter woody debris onto abandoned road surfaces.

TYPICAL SECTION SHEET

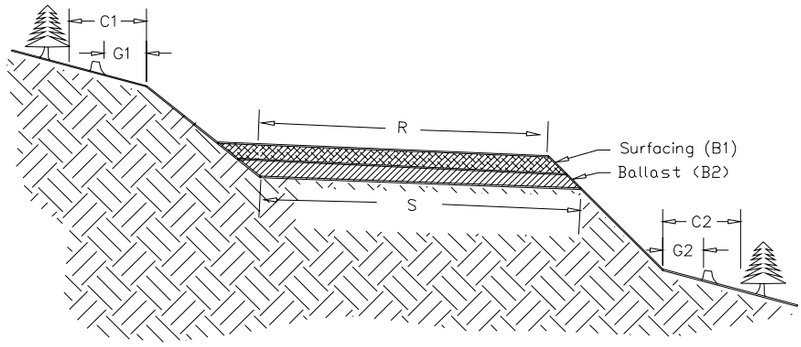
ROAD CROSS–SECTION
(not to scale)





TURNOUT DETAIL
PLAN VIEW
(not to scale)

OUTSLOPED
ROAD CROSS–SECTION
(not to scale)

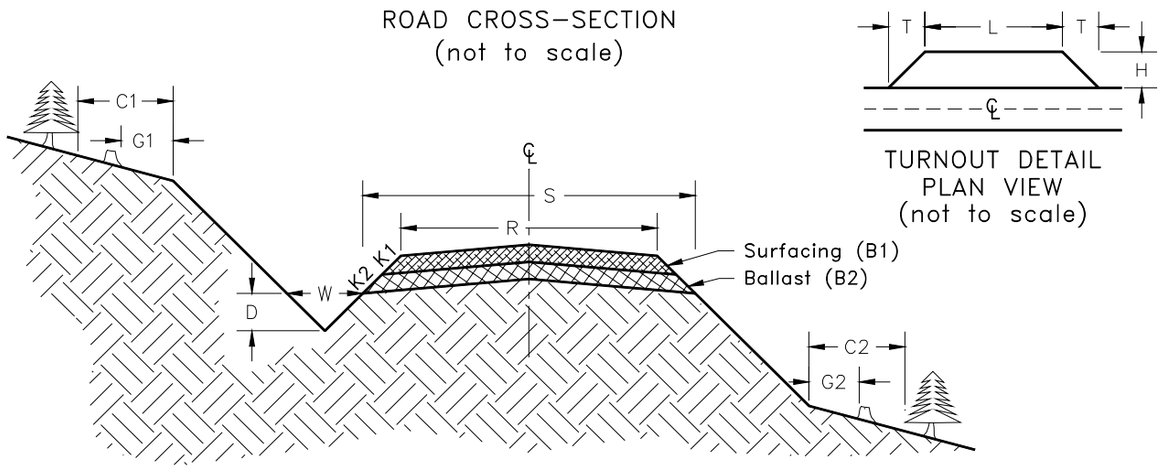


Road Number	From Station	To Station	Tolerance Class	Subgrade Width	Road Width	Ditch Width	Ditch Depth	Crown in. @ CL	Grubbing Limits		Clearing Limits	
				S	R	W	D		G1	G2	C1	C2
CG-2002	MP 0.0	MP 0.54	C	18’	12’	3’	1’	4“	NA	NA	NA	NA
CG-2002 Ext	0+00	14+60	C	16’	10’	3’	1’	4”	NA	NA	ROW	Tags
CG-2002A	0+00	12+91	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2050	MP 0.0	MP 0.48	C	18’	12’	3’	1’	4“	NA	NA	NA	NA
	MP 0.48	MP 0.52	B	18’	12’	3’	1’	4”	2’	2’	Marked Trees	
	MP 0.52	MP 1.14	C	18’	12’	3’	1’	4“	NA	NA	NA	NA
CG-2050	0+00	26+84	C	16’	10’	2’	1’	4”	NA	NA	NA	NA
CG-2050A	0+00	23+14	C	16’	10’	2’	1’	4”	NA	NA	5’	5’
CG-2050B	0+00	6+79	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2050C	0+00	2+17	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
Spur A	0+00	12+35	C	16’	10’	2’	1’	4”	2’	2’	ROW	Tags
CG-2060	MP 0.1	MP 0.45	C	18’	12’	3’	1’	4”	NA	NA	10’	10’
Spur B	0+00	14+34	C	16’	10’	2’	1’	4”	2’	2’	ROW	Tags
CG-2070	MP 0.0	MP 0.5	C	18’	12’	3’	1’	4”	NA	NA	Marked Trees	
CG-2070	0+00	46+50	C	18’	12’	3’	1’	4”	NA	NA	ROW	Tags
	46+50	93+16	C	16’	10’	3’	1’	4”	NA	NA	ROW	Tags
CG-2070C	0+00	7+21	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2070D	0+00	5+67	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG -2071	0+00	44+06	C	16’	10’	3’	1’	4”	2’	2’	ROW	Tags
	44+06	60+97	C	16’	10’	3’	1’	4”	5’	5’	ROW	Tags
CG-2072	0+00	5+72	C	16’	10’	outslope		6” / 10’	NA	NA	ROW	Tags
CG-2071E	0+00	3+74	C	16’	10’	3’	1’	4”	NA	NA	ROW	Tags
CG-2071F	0+00	10+70	C	16’	10’	3’	1’	4”	NA	NA	ROW	Tags
CG-2071G	0+00	3+18	C	16’	10’	3’	1’	4”	NA	NA	ROW	Tags
CG-2080	MP 0.0	MP 0.62	C	18’	12’	3’	1’	4”	NA	NA	ROW	Tags
CG-2080	0+00	59+53	C	18’	12’	3’	1’	4”	2’	2’	ROW	Tags
CG-2080A	0+00	7+78	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2080B	0+00	16+06	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2080C	0+00	7+49	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2080D	0+00	21+85	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2080E	0+00	4+32	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2080F	0+00	1+73	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags

TYPICAL SECTION SHEET

Road Number	From Station	To Station	Tolerance Class	Subgrade Width	Road Width	Ditch		Crown in. @ CL	Grubbing Limits		Clearing Limits	
						Width	Depth					
				S	R	W	D		G1	G2	C1	C2
CG-2080G	0+00	6+18	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2090	MP 0.0	MP 1.8	C	18’	12’	3’	1’	4”	NA	NA	ROW	Tags
	0+00	13+77	C	16’	10’	3’	1’	4”	2’	2’	ROW	Tags
CG-2090A	0+00	19+51	C	16’	10’	2’	1’	4”	NA	NA	ROW	Tags
CG-2090B	0+00	3+28	C	10’	16’	2’	1’	4”	NA	NA	ROW	Tags

ROCK LIST
(Page 1 of 2)



BALLAST

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout		
									Length	Width	Taper
			K2	B2					L	H	T
CG-2002 Ext	0+00	14+60	1.5:1	12”	54	14.60	788	1.			
CG -2050	MP 0.48	MP 0.52	1.5:1	12”	70	2.11	148	1.			
	0+00	26+84	1.5:1	12”	54	26.84	1,449	1.			
CG -2070	0+00	46+50	1.5:1	10”	54	46.50	2,511	1.			
	46+50	93+16	1.5:1	10”	46	46.66	2,146	1.			
CG -2071	0+00	60+97	1.5:1	12”	54	60.97	3,292	1.			
CG -2072	0+00	5+72	1.5:1	10”	46	5.72	263	1.			
CG -2080	MP 0.00	MP 0.62	1.5:1	8”	40	32.74	1,310	3.			
	0+00	59+53	1.5:1	12”	54	59.53	3,215	3.			
CG -2090	MP 0.80	MP 1.80	1.5:1	6”	33	52.80	1,742	4.			
	0+00	13+77	1.5:1	12”	54	13.77	744	4.			
Turnouts			1.5:1	12”	54	6.00	324	1., 3., or 4.	50’	10’	25’
Riprap							186	1., 3., or 4.			
Stream Simulation	45+97 CG-2070						56	1., 3., or 4.			
						Required Rock Total:	18,174				
*CG-2002A	0+00	12+91	1.5:1	12”	54	12.91	697	1.			
*CG –2050A	0+00	23+14	1.5:1	6”	30	23.14	694	1.			
*CG –2050B	0+00	6+79	1.5:1	12”	54	6.79	367	1.			
*CG –2050C	0+00	2+17	1.5:1	12”	54	2.16	117	1.			
*Spur A	0+00	12+35	1.5:1	12”	54	12.35	667	1.			
*Spur B	0+00	14+34	1.5:1	12”	54	14.34	774	1.			
*CG –2070C	0+00	7+21	1.5:1	12”	54	7.21	389	1.			
*CG –2070D	0+00	5+67	1.5:1	12”	54	5.67	306	1.			
*CG –2071E	0+00	3+74	1.5:1	12”	54	3.74	202	1.			
*CG –2071F	0+00	10+70	1.5:1	12”	54	10.70	578	1.			
*CG –2071G	0+00	3+18	1.5:1	12”	54	3.18	172	1.			
*CG –2080A	0+00	7+78	1.5:1	12”	54	7.78	420	3.			
*CG –2080B	0+00	16+06	1.5:1	12”	54	16.06	867	3.			
*CG –2080C	0+00	7+49	1.5:1	12”	54	7.49	404	3.			
*CG –2080D	0+00	21+85	1.5:1	12”	54	21.85	1,180	3.			
*CG –2080E	0+00	4+32	1.5:1	12”	54	4.32	233	3.			
*CG –2080F	0+00	1+73	1.5:1	12”	54	1.73	94	3.			
*CG –2080G	0+00	6+18	1.5:1	12”	54	6.17	333	3.			
*CG –2090A	0+00	19+57	1.5:1	12”	54	19.57	1,057	4.			
*CG –2090B	0+00	3+38	1.5:1	12”	54	3.38	183	4.			
*Landings					50	30	1,500	1., 3., or 4.			
*Riprap							18	1., 3., or 4.			
						Optional Rock Total:	11,252				

*Optional Rock

BALLAST TOTAL 29,426 Cubic Yards

ROCK LIST
(Page 2 of 2)

SURFACE

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Total	Rock Source
			K1	B1	2 ½ INCH MINUS			
CG -2002	0+00	0+70	1.5:1	4”	Bridge Approaches		30	2.
CG -2050	MP 0.48	MP 0.52	1.5:1	4”	24	2.10	50	2.
CG-2070	45+97			4”	Culvert Bed		20	2.
CG-2071	4+88	5+98	1.5:1	4”	Bridge Approaches		50	2.

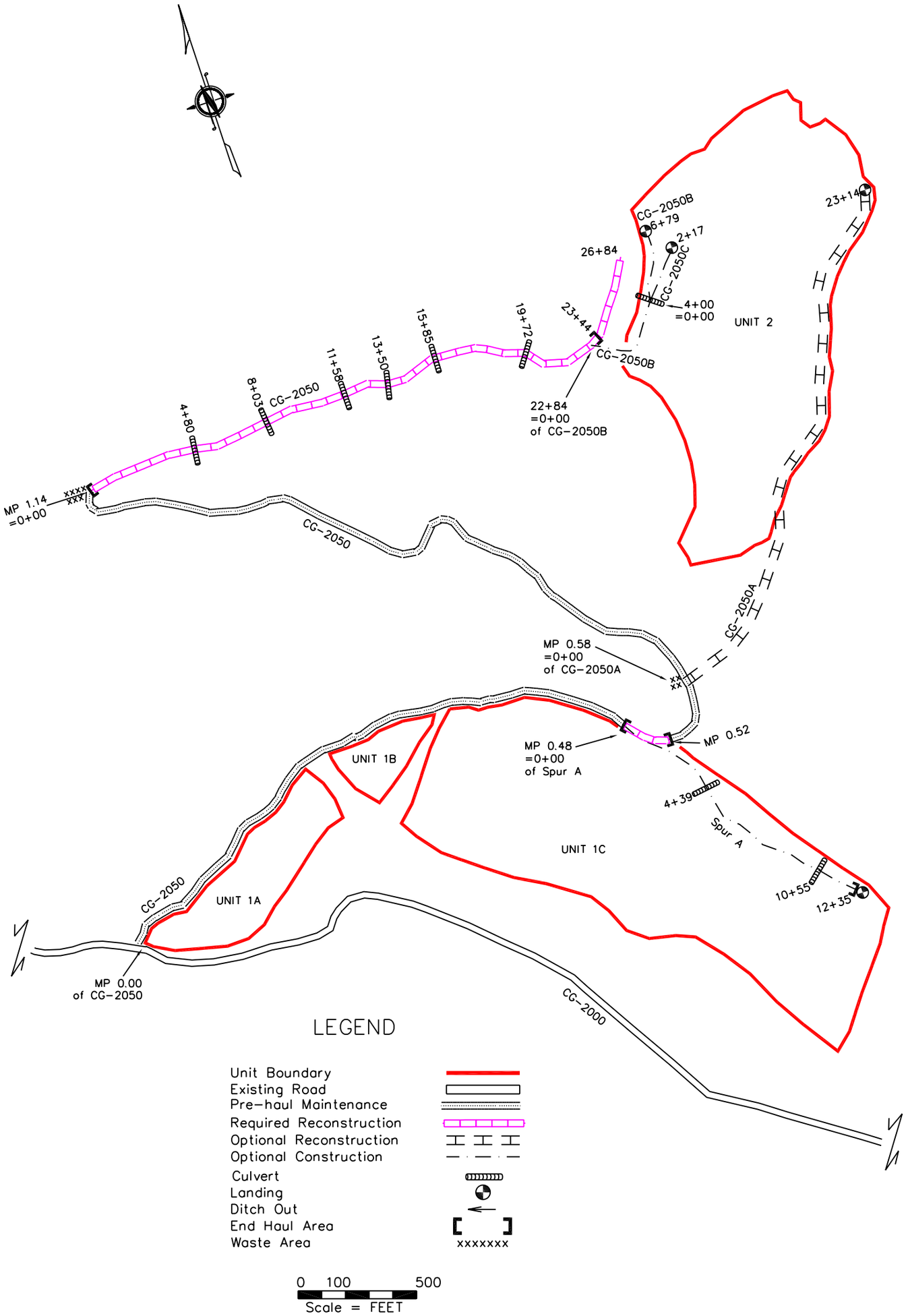
SURFACE TOTAL 150 Cubic Yards

If Purchaser elects to haul on optional rock roads in dry weather, the depth listed above is recommended but not required (See Clause 7.4.2-4).

LITTLE TIGER THINNING

ROAD PLAN MAP

(Page 1 of 9)



LEGEND

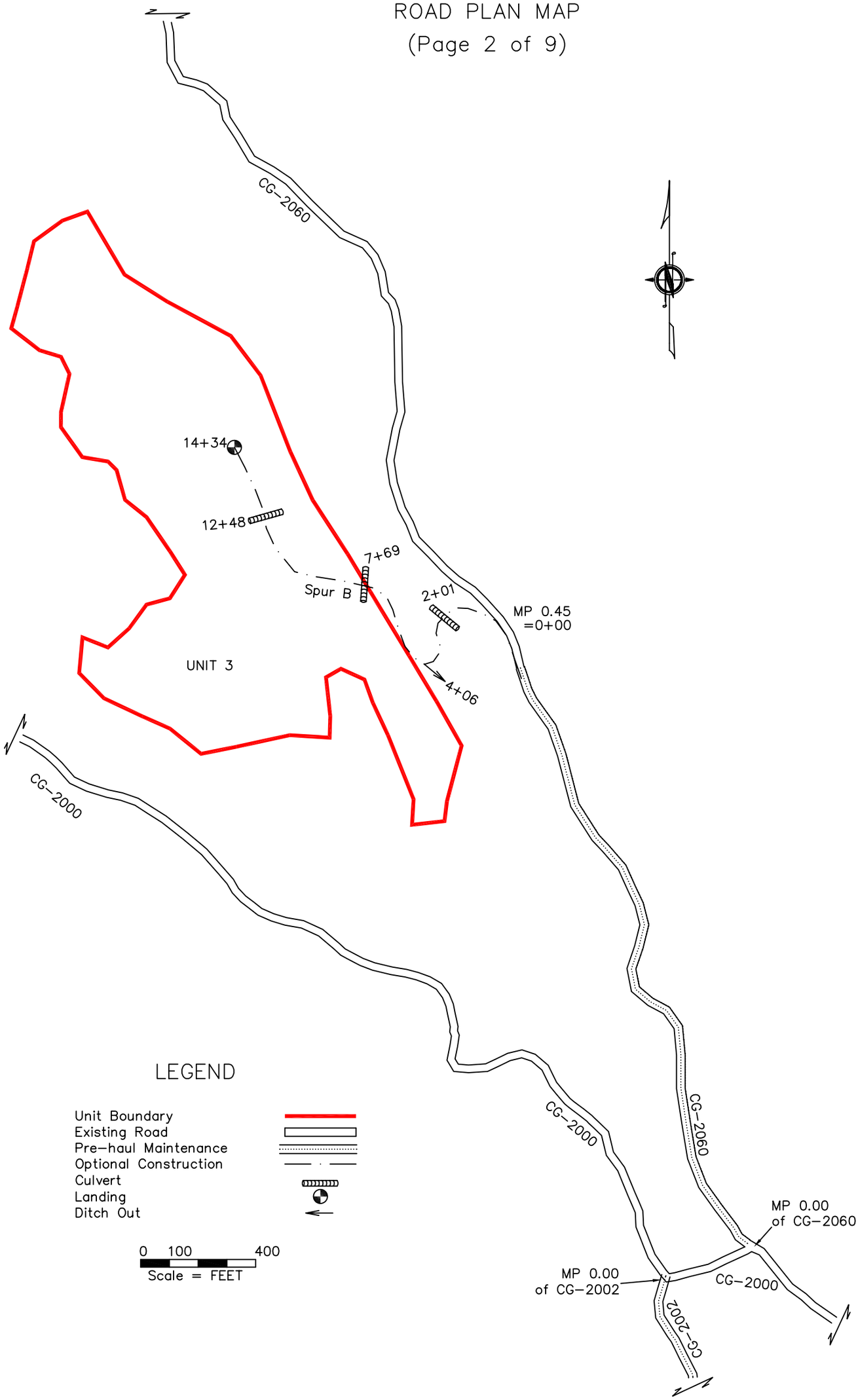
Unit Boundary
Existing Road
Pre-haul Maintenance
Required Reconstruction
Optional Reconstruction
Optional Construction
Culvert
Landing
Ditch Out
End Haul Area
Waste Area
xxxxxxx

0 100 500
Scale = FEET

LITTLE TIGER THINNING

ROAD PLAN MAP

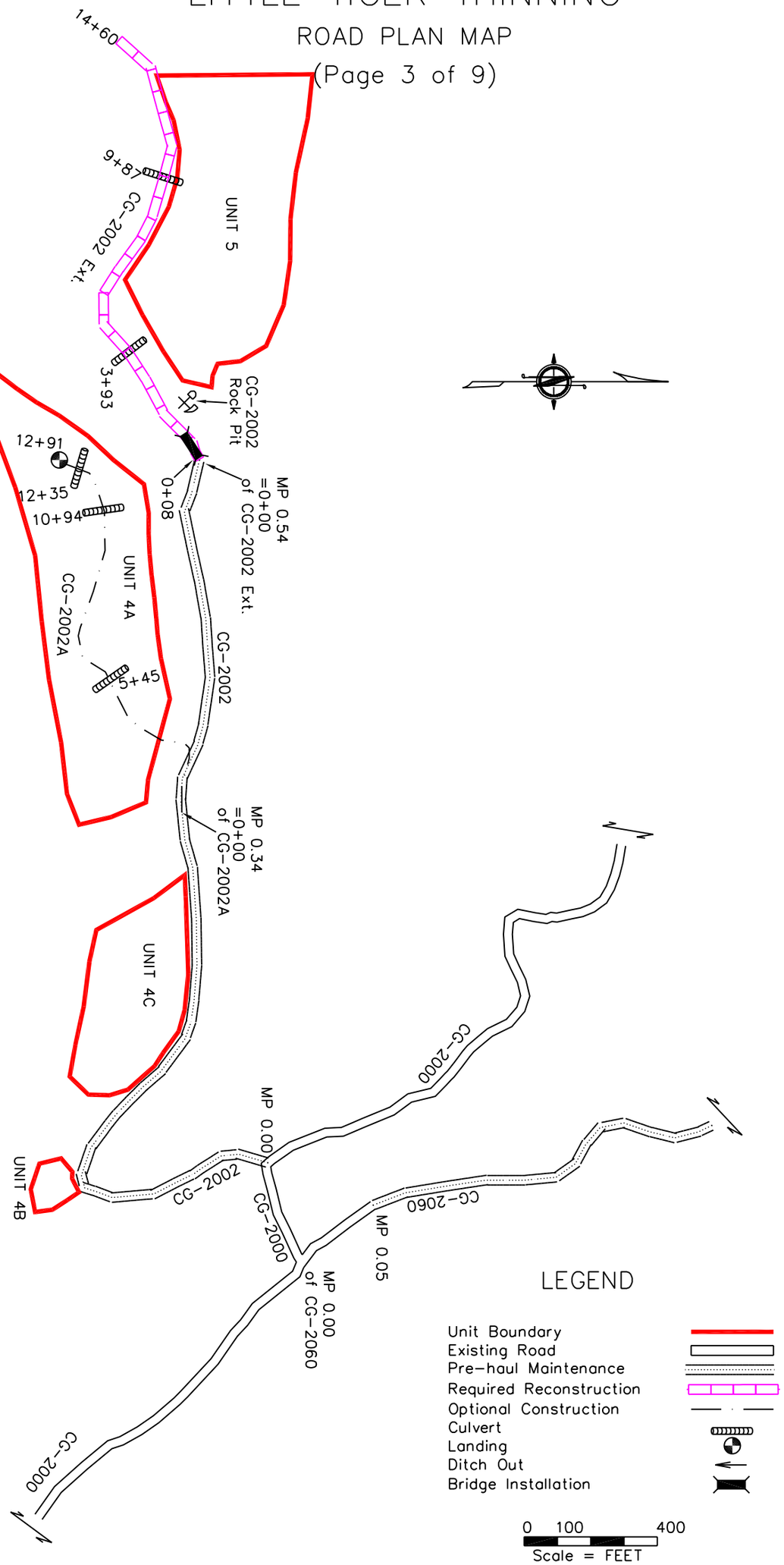
(Page 2 of 9)



LITTLE TIGER THINNING

ROAD PLAN MAP

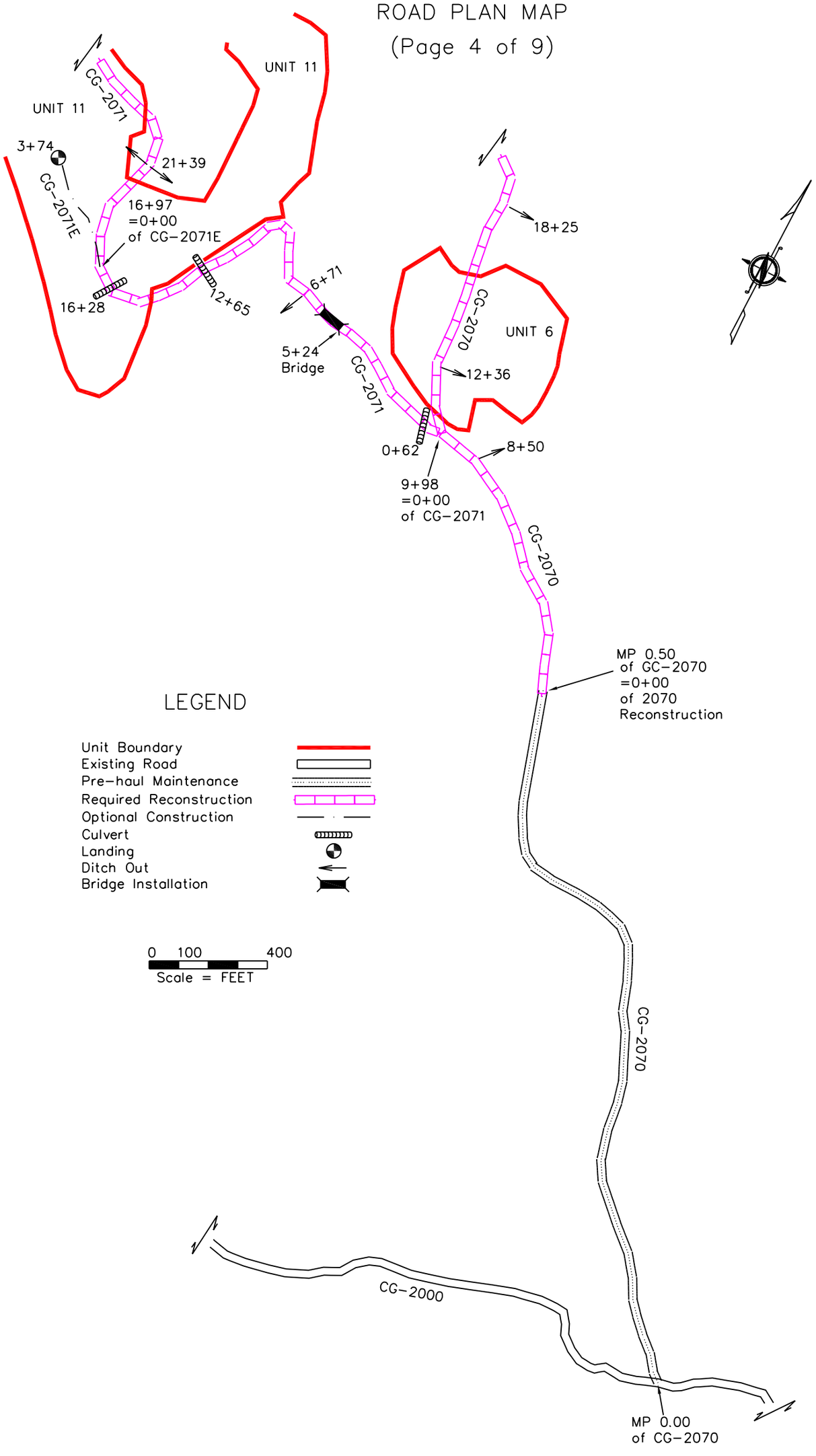
(Page 3 of 9)



LITTLE TIGER THINNING

ROAD PLAN MAP

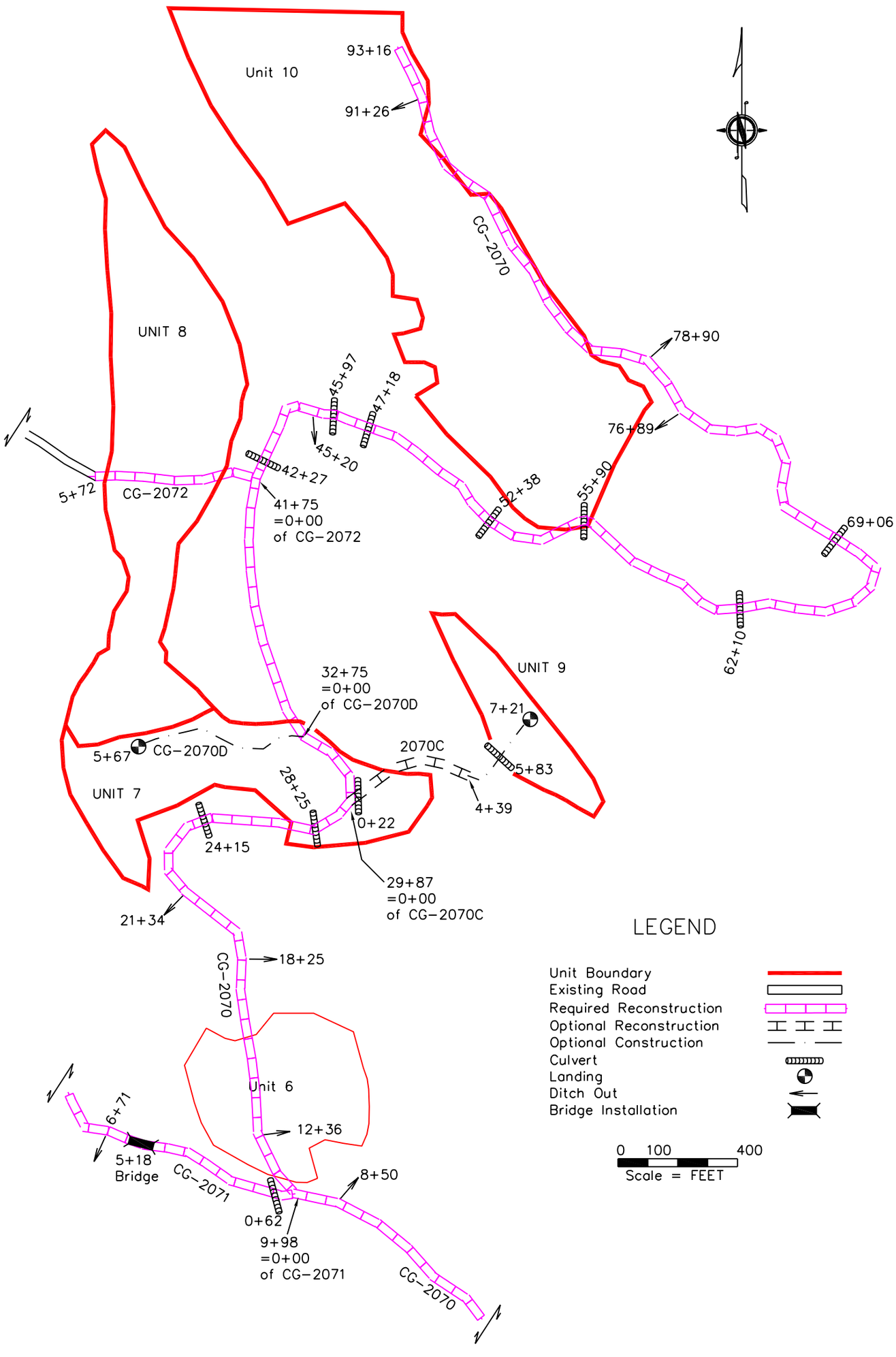
(Page 4 of 9)



LITTLE TIGER THINNING

ROAD PLAN MAP

(Page 5 of 9)



LITTLE TIGER THINNING

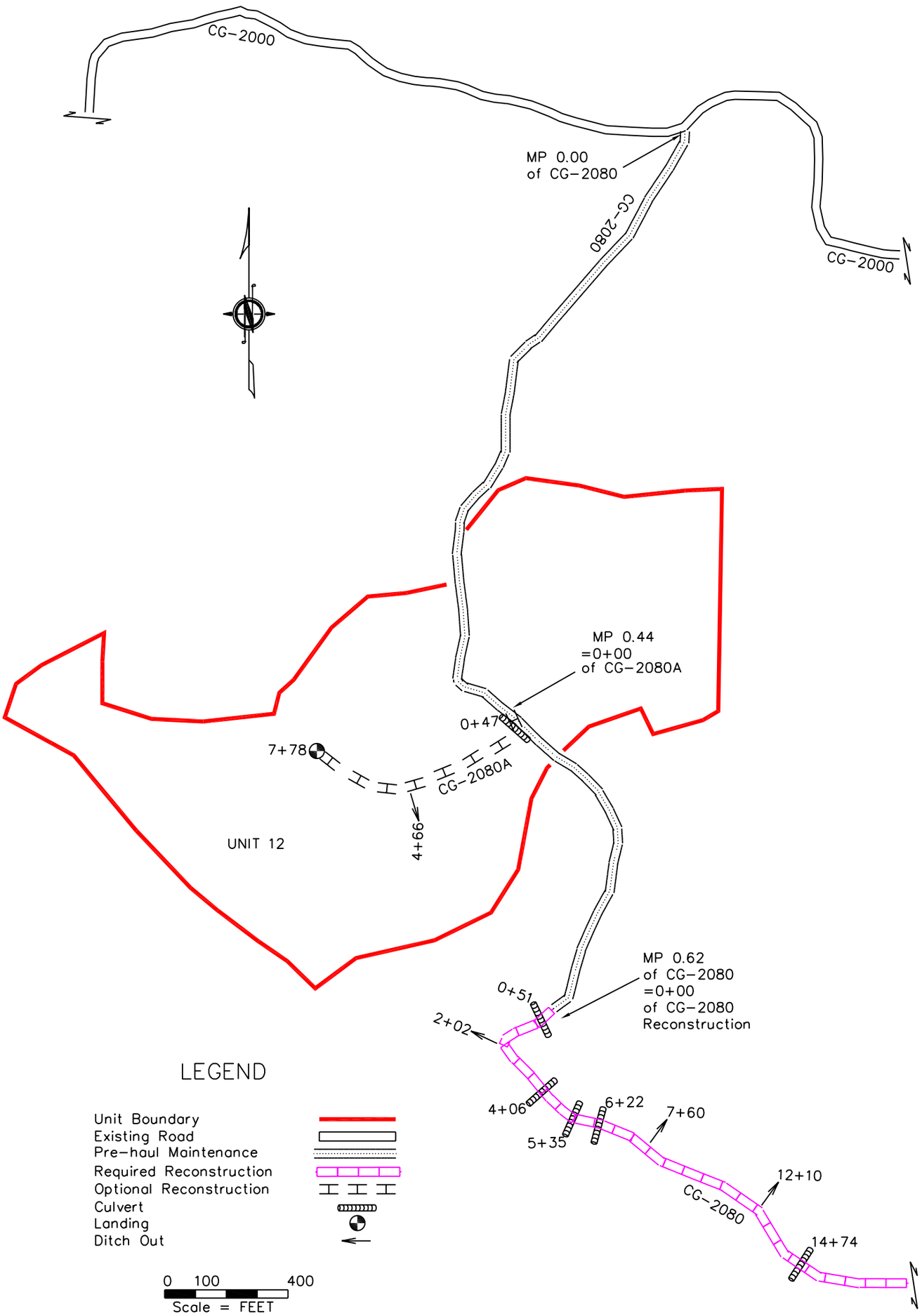
ROAD PLAN MAP

(Page 6 of 9)

LITTLE TIGER THINNING

ROAD PLAN MAP

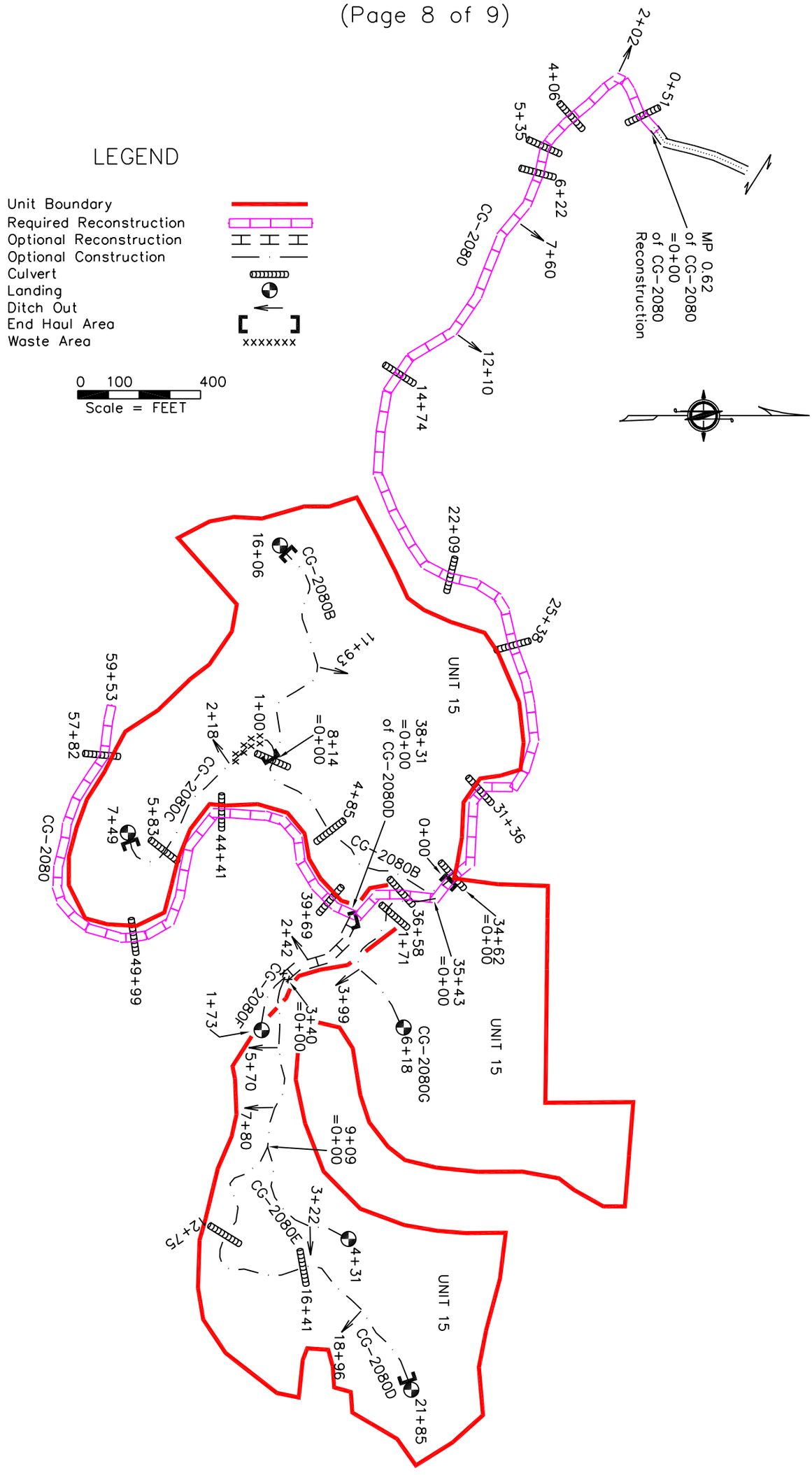
(Page 7 of 9)



LITTLE TIGER THINNING

ROAD PLAN MAP

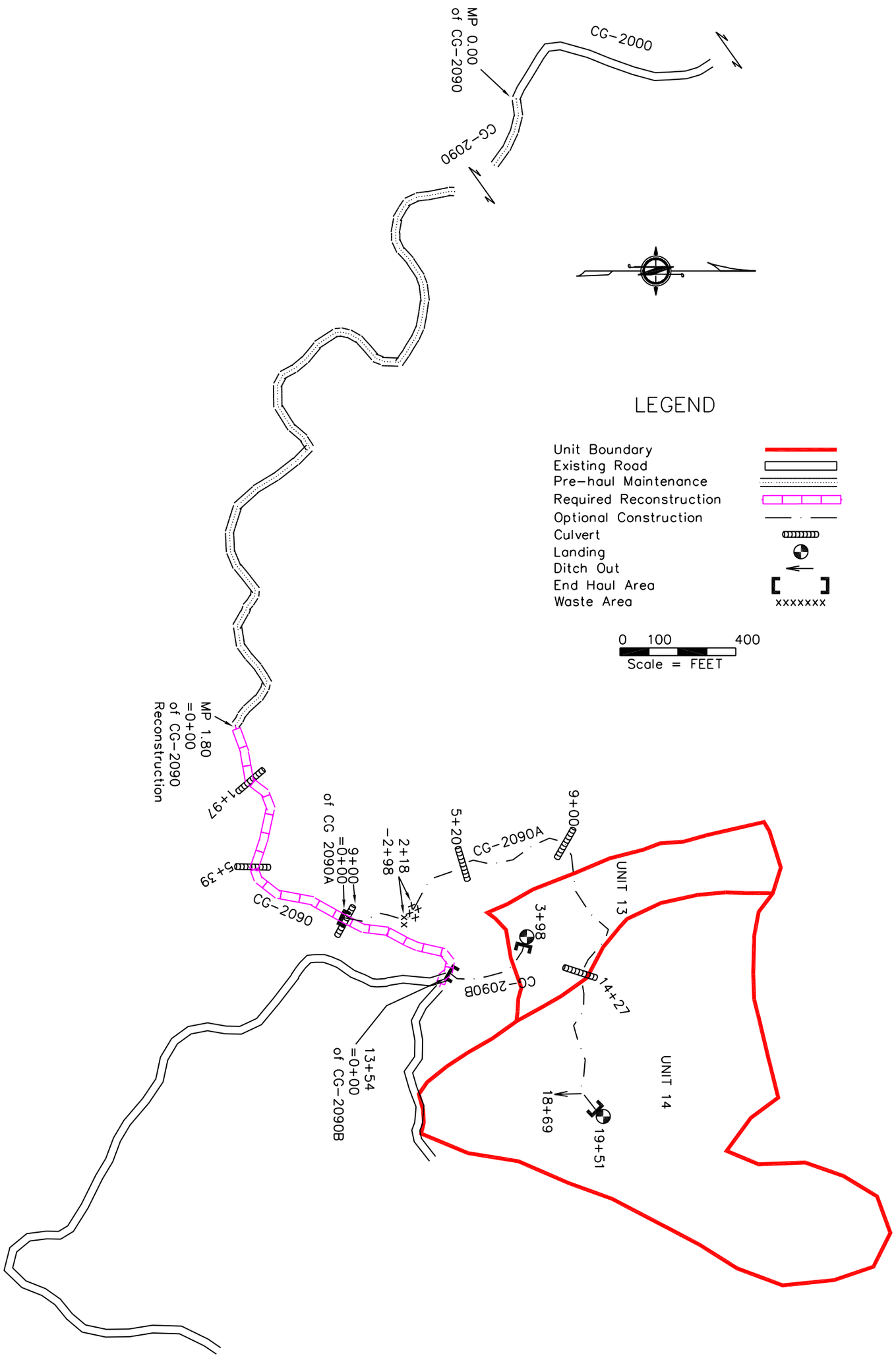
(Page 8 of 9)



LITTLE TIGER THINNING

ROAD PLAN MAP

(Page 9 of 9)

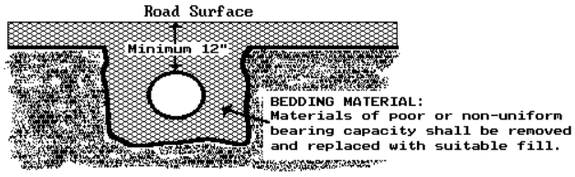


CULVERT LIST

Road Number	Location	Culvert Dia.	Culvert Gauge	Length (ft) Culvert	Downspt	Flume	Riprap (C.Y.) Inlet	Outlet	Type	Backfill Material	Placement Method	Const. Staked	Remarks
			If Steel										
CG-2002-Ext	0+28						20	10	LL			RP	40’ Bridge
	3+93	18”	16	28’			¼	¼	LL	NT		RP	
	9+87	18”	16	30’			¼	¼	LL	NT		RP	
CG-2002A	5+45	18”	16	32’			¼	¼	LL	NT		RP	
	10+94	18”	16	30’			¼	¼	LL	NT		RP	
	12+35	18”	16	34’			¼	¼	LL	NT		RP	
CG -2050	4+80	18”	16	30’			¼	¼	LL	NT		RP	
	8+03	18”	16	32’			¼	¼	LL	NT		RP	
	11+58	24”	16	32’			2	2	LL	NT		RP	T-5 Stream
	13+50	18”	16	32’			¼	¼	LL	NT		RP	
	15+85	18”	16	32’			½	½	LL	NT		RP	T-5 Stream
	19+72	18”	16	32’			¼	¼	LL	NT		RP	
CG-2050B	4+00	18”	16	28’			¼	¼	LL	NT		RP	
Spur A	4+39	18”	16	32’			¼	¼	LL	NT		RP	
	10+55	18”	16	32’			¼	¼	LL	NT		RP	
Spur B	2+01	66”	12	48’			4	4	LL	NT		RP	T-3 Stream
	4+06												Dictchout Left
	7+69	18”	16	36’			¼	¼	LL	NT		RP	
	12+48	18”	16	30’			¼	¼	LL	NT		RP	
CG -2070	8+50												Dictchout Right
	12+36												Dictchout Right
	18+25												Dictchout Right
	21+34												Dictchout Left
	24+15	48”	12	42’			2	2	LL	NT		RP	T-5 Stream
	28+25	18”	16	28’			¼	¼	LL	NT		RP	
	42+27	18”	16	28’			¼	¼	LL	NT		RP	
	45+20											RP	Dictchout Right
	45+97	96”	10	50’			20	20	HL	SL		RP	T-3 Stream
	47+18	18”	16	28’			¼	¼	LL	NT		RP	
	52+38	18”	16	28’			¼	¼	LL	NT		RP	
	55+90	36”	14	50’			¼	¼	LL	NT		RP	T-5 Stream
	62+10	18”	16	28’			¼	¼	LL	NT		RP	
	69+06	18”	16	28’			¼	¼	LL	NT		RP	
	76+89												Dictchout Left
	78+90												Dictchout Right
	91+26												Dictchout Left
CG-2070C	0+22	18”	16	32’			¼	¼	LL	NT		RP	Junction w/ CG2070
	5+83	18”	16	28’			¼	¼	LL	NT		RP	
CG -2071	0+62	18”	16	34’			¼	¼	LL	NT		RP	
	5+51						30	30	LL				54’ Bridge
	6+71												Dictchout Left
	12+65	18”	16	28’			¼	¼	LL	NT		RP	
	16+38	30”	14	32’			2	2	LL	NT		RP	
	21+39												Dictchout Left / Right
	31+73	18”	16	30’			¼	¼	LL	NT		RP	
	37+53	18”	16	28’			¼	¼	LL	NT		RP	
	45+67	18”	16	30’			¼	¼	LL	NT		RP	Start New Const.
	50+86	18”	16	28’			¼	¼	LL	NT		RP	
CG-2071F	3+18	18”	16	28’			¼	¼	LL	NT		RP	
CG-2071G	0+00	18”	16	36’			¼	¼	LL	NT		RP	In ditch of CG-2071
CG-2080	0+51	42”	14	42’			3	3	LL	NT		RP	T-3 stream
	2+02												Dictchout Right
	4+06	24”	14	50’			1	1	LL	NT		RP	Seep
	5+35	42”	14	54’			4	4	LL	NT		RP	T-3 stream
	6+22	18”	16	50’			½	½	LL	NT		RP	
	7+60												Dictchout Left
	12+10												Dictchout Left
	14+74	24”	14	70’		10’	1	1	LL	NT		RP	Replace existing cmp
	22+09	18”	16	30’			¼	¼	LL	NT		RP	
	25+38	18”	16	30’			¼	¼	LL	NT		RP	
	31+36	18”	16	54’			¼	¼	LL	NT		RP	
	34+62	18”	16	56’			¼	¼	LL	NT		RP	Replace existing cmp
	36+58	18”	16	32’			¼	¼	LL	NT		RP	
	39+69	18”	16	36’			¼	¼	LL	NT		RP	
	44+41	18”	16	30’		20’	¼	¼	LL	NT		RP	Replace existing cmp
	49+99	18”	16	28’			¼	¼	LL	NT		RP	
	57+82	30”	14	48’			½	½	LL	NT		RP	Replace existing cmp
CG-2080A	0+47	18”	16	32’			¼	¼	LL	NT		RP	Set in 2080 ditchline
	4+66												Dictchout Left

Road		Culvert		Length (ft)			Riprap (C.Y.)			Backfill	Placement	Const.	
Number	Location	Dia.	Gauge	Culvert	Downspt	Flume	Inlet	Outlet	Type	Material	Method	Staked	Remarks
CG-2080B	4+85	18”	16	28’			¼	¼	LL	NT		RP	
	8+14	18”	16	32’			¼	¼	LL	NT		RP	Junct. W/ CG-2080C
	11+93												Ditchout Right
CG-2080C	2+18												Ditchout Right
	5+83	18”	16	28’			¼	¼	LL	NT		RP	
CG-2080D	2+42												Ditchout Right
	5+70												Ditchout Right
	7+80												Ditchout Right
	12+75	18”	16	32’			¼	¼	LL	NT		RP	
	16+41	18”	16	32’			¼	¼	LL	NT		RP	
	18+96												Ditchout Right
CG-2080E	3+22												Ditchout Right
CG-2080G	1+71	18”	16	30’			¼	¼	LL	NT			
	3+99												Ditchout Right
CG-2090	1+97	36”	14	40’			2	2	LL	NT		RP	T-5 Stream
	5+39	30”	14	90’			2	2	LL	NT		RP	T-5 Stream
	9+00	18”	16	30’			½	½	LL	NT		RP	
CG-2090A	5+20	18”	16	28’			¼	¼	LL	NT		RP	
	9+00	18”	16	28’			¼	¼	LL	NT		RP	
	14+27	18”	16	28’			¼	¼	LL	NT		RP	
	18+69												Ditchout Right

CULVERT BACKFILL AND BASE PREPARATION
(For culverts less than 36")

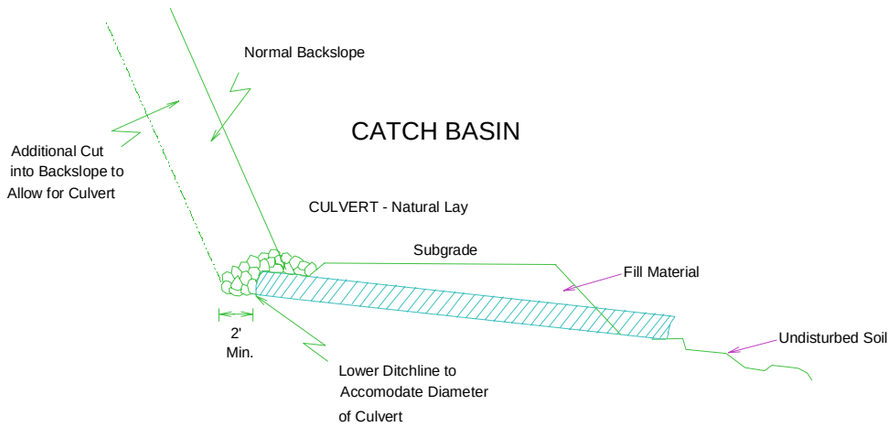


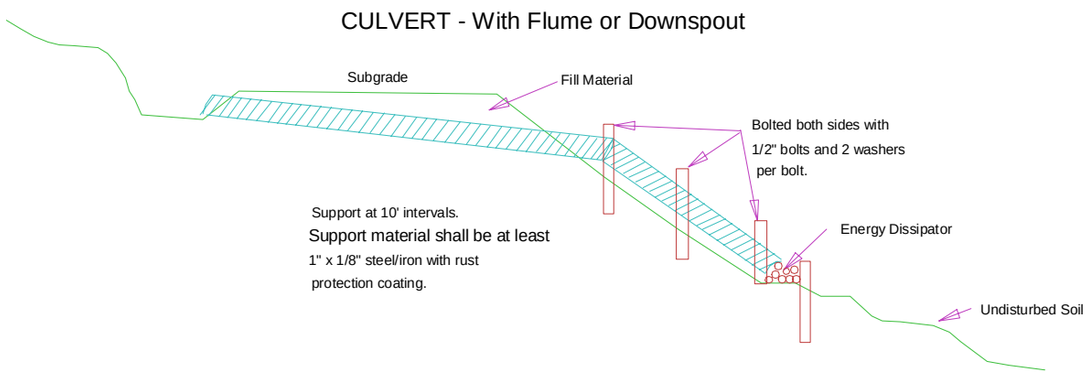
Key:

SR - Shot Rock
NT - Native (bank run)
SL - Select Fill
HL - Heavy Loose Riprap
LL - Light Loose Riprap
Flume - Half round pipe
Downspout - Full round pipe

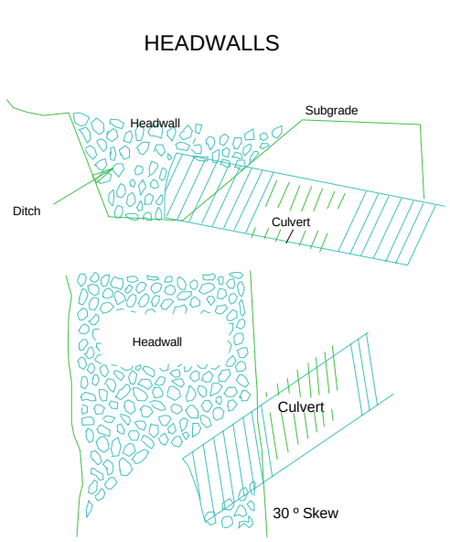
CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 1 of 2)

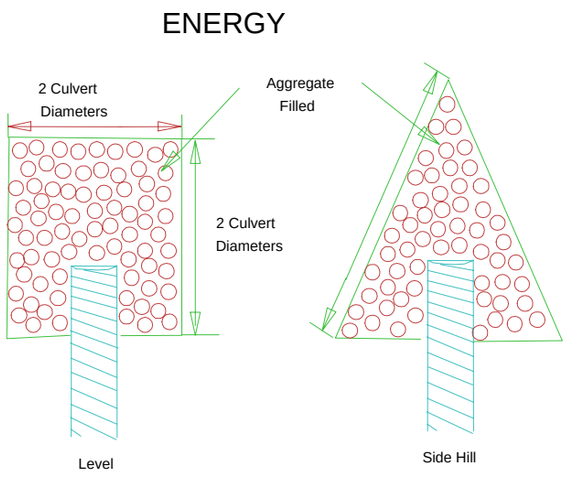




Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.



Dissipator Specifications:
Depth: 1 culvert diameter
Aggregate: as specified in the CULVERT LIST.

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

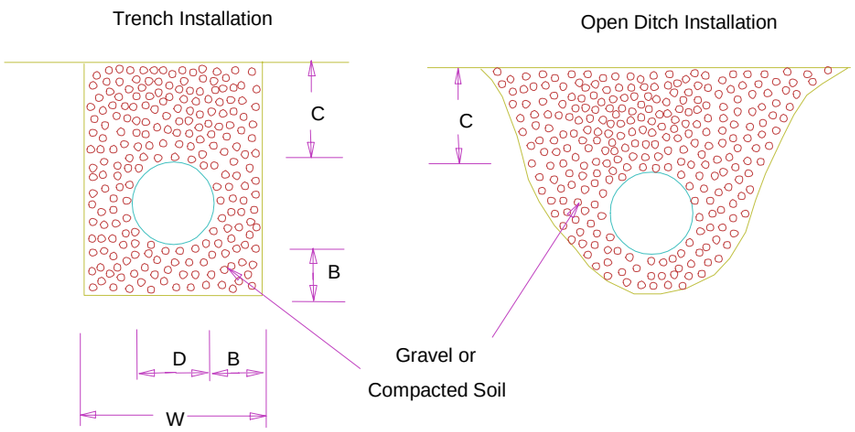
1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.

2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.

3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.

4. Site conditions and availability of bedding materials often dictate the type of installation method used.

5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% of that material is required. This minimum compaction can be achieved by either hand or mechanical tamping. Purchaser shall test the compaction level and bare all associated costs.



MINIMUM DIMENSIONS
Trench or Open Ditch Installation

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

FOREST ACCESS ROAD
MAINTENANCE SPECIFICATIONS

1. CONSTRUCTION AND RECONSTRUCTION (Prior to acceptance to the contract or acceptance on a timber sale).

A. Cuts and Fills
   1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1 ½: 1 slopes with selected material or as directed. Remove overhanging material from the cut slopes.
   2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or watercourses.
   3. Undesirable slide materials and debris shall not be mixed into the surface material.

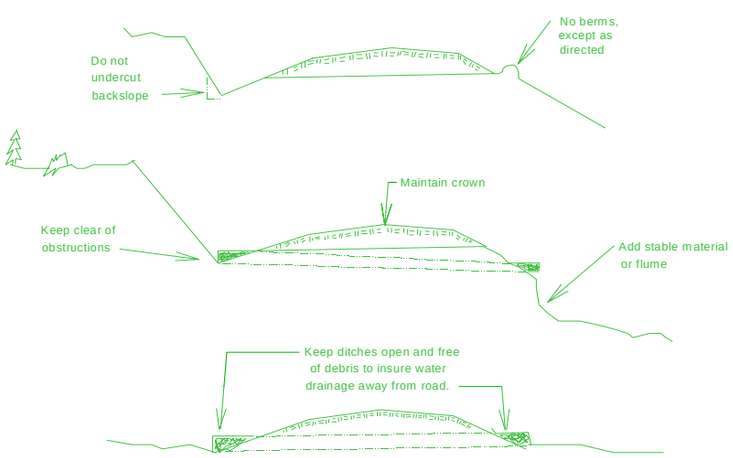
B. Surface
   1. Grade and shape the road surface, turnouts, and shoulders to the original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
   2. Blading must not undercut the backslope at the bottom of the ditchline or cut geotextile at centerline.
   3. Watering may be required to control dust and to retain fine surface rock.
   4. Desirable surface material shall not be bladed off the roadway.
   5. Replace surface material lost or worn away.
   6. Remove berms except as directed by the State.
   7. Barrel spread soft spots to prevent degradation of geotextile.

C. Drainage
   1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
   2. Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This must be done even during periods of inactivity.
   3. Add stable material at the outlet end of the culvert as needed to stabilize the streambed.
   4. Headwalls: maintain to the road shoulder level with material that will resist erosion.
   5. Keep silt bearing surface runoff from getting into live streams.

D. Structures
   Repair bridges, culverts, cattleguards, fences, and other road structures to the condition required by the construction specifications.

E. Termination of Use or End of Season
   Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch, and culvert cleaning and water bars.

F. Debris
   Remove fallen timber, limbs, and stumps from the slopes or roadway.



LIVE STREAM CULVERT REMOVAL PROCEDURE

Order of work is as follows, deviations shall be approved, in writing, by the Contract Administrator.

1) Purchaser shall notify the State of intent to start project, and a pre-work conference shall be held before move in of equipment. State will designate a representative that will remain on site at all times when work is being performed in creek channel.
2) Assemble the items on the Materials List onsite before proceeding.
3) Remove 95% of fill (see FILL REMOVAL DETAIL). Stream banks should be sloped no steeper than a 2:1 slope. For the Culvert Removal on Spur B (Sta 2+01) end haul to milepost 0.3 of CG-2060 Road, and for the two culvert removals on the CG-2080 Road (Sta 0+51 and 5+35) end haul waste to milepost 0.6 on the CG-2080 road.
4) Set up pumps (2 required, with one as backup). Optionally if gravity diversion is possible it may also be used. Use procedure as in 5.
5) Dam up stream with sandbags and line floor of dam with plastic (to prevent sub-surface water flow), place clean rock on plastic to hold in place, and key leading edge of plastic into channel bottom - see SETTLING POND AND PUMP DETAIL. Build a settling pond at culvert outlet. Fill may need to be removed before the settling pond installation due to space limitations. Pump clean water at catch basin around work site and back into stream. Dirty water shall be pumped away from site and onto forest floor a minimum of 200 feet from live streams.
6) Remove remainder of fill and culvert.
7) Apply Light Loose Riprap to all exposed mineral soil within 3 feet of the live stream.
8) Backfill settling pond.
9) Cover exposed soils within 100 feet of all live streams with straw (minimum depth of 8 inches) and grass seed.

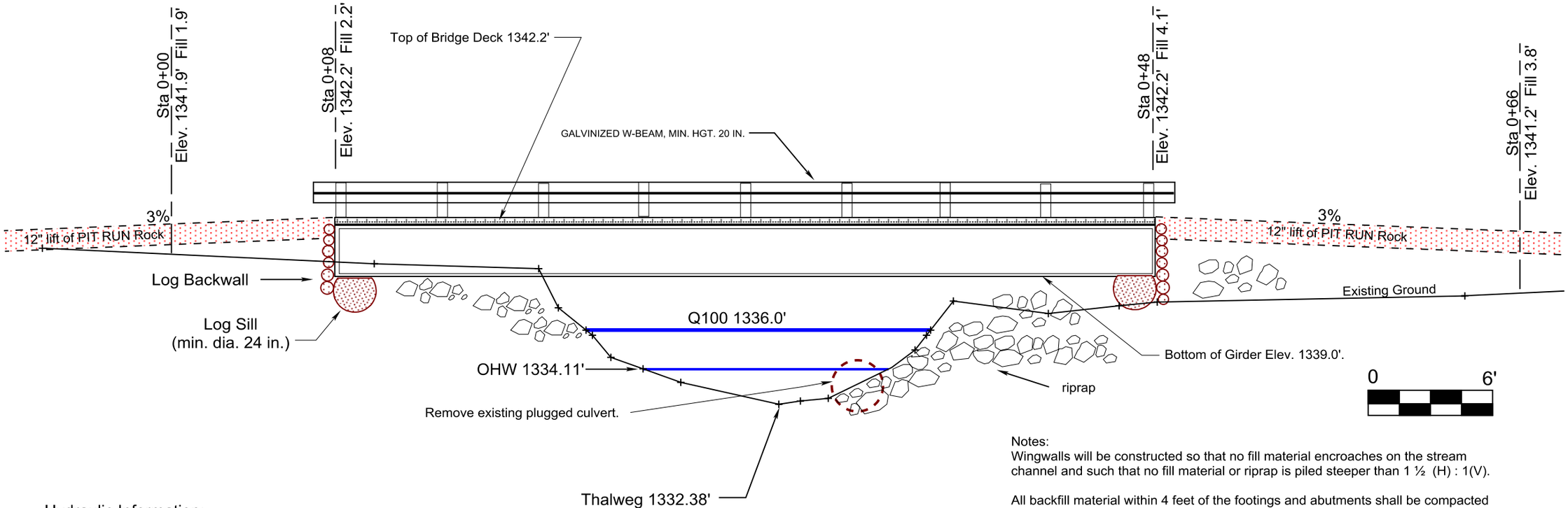
Materials List:
For each work site:

- 2 pumps, (one as a backup) the clean water pump (dam at culvert catch basin) shall have a minimum capacity of 600 gallons per minute. The dirty water pump (settling pond) and the backup pump shall each have a minimum capacity of 600 gpm. Culvert removal should not start during rain or threat of rain;
- 4,000 square feet plastic sheet;
- 200 feet of silt fence and stakes;
- 50 bales of straw;

BRIDGE INSTALLATION DETAIL
CG-2002 @ STATION 0+08 TO 0+48
(PAGE 1 OF 2)

Bridge Information:
Loading: U80/L90
Size: 16-ft x 40-ft.
Slope: < 2.0%
W.B.W.G.* : 14 ft.
Vert. Clear** : 3.0 ft.

*Width between wheel guards.
** Vertical clearance above 100-yr flood level.



Hydraulic Information:
Avg.Stream Width: 11.8 ft.
Average Gradient: 2.2%.
Drainage Area: 478 acres.
Precipitation: 106 inches.
Q100 = 221.37 cfs
Q100 Elev.: 1336.0 ft.
Q(ohw) = 1334.11 ft.
Min. Channel Width: 11.8 ft.

Notes:
Wingwalls will be constructed so that no fill material encroaches on the stream channel and such that no fill material or riprap is piled steeper than 1 ½ (H) : 1(V).

All backfill material within 4 feet of the footings and abutments shall be compacted with hand held vibratory compactor, plate compactor, or small smooth drum roller.

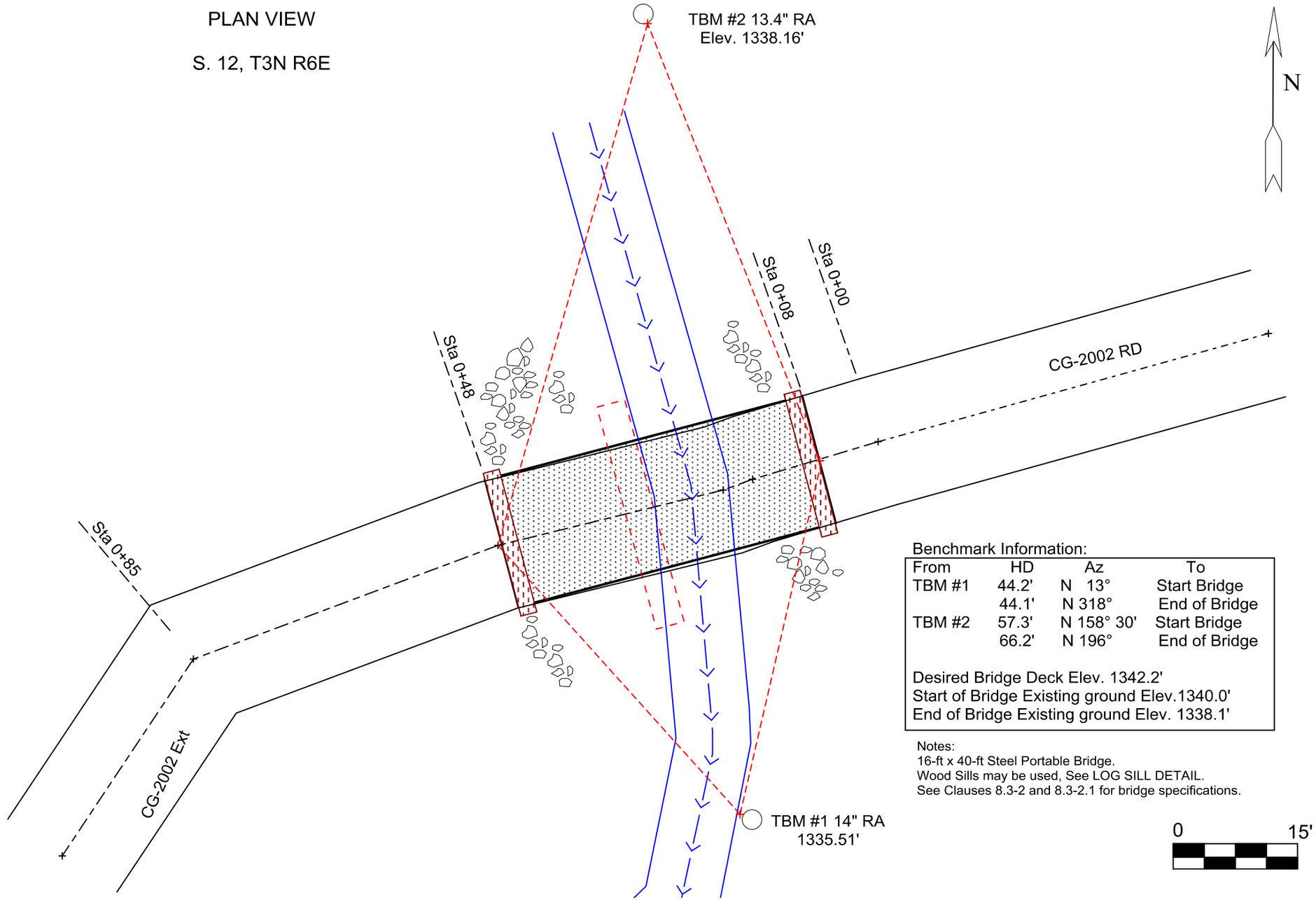
Purchaser is responsible for construction staking and verifying elevations prior to purchasing materials or construction. Contract Administrator shall approve log sill locations in writting.

This drawing and elevations are for reference only. The minimum vertical clearance of 3 feet and maximum 4% approach grades shall be maintained.
This drawing assumes 24" x 18' log sills, girder depth 2.5', 4" bridge deck, and 4" running planks, for a 38" total depth of bridge.

BRIDGE INSTALLATION DETAIL
CG-2002 @ STATION 0+08 TO 0+48
(PAGE 2 OF 2)

PLAN VIEW

S. 12, T3N R6E



Benchmark Information:

From	HD	Az	To
TBM #1	44.2'	N 13°	Start Bridge
	44.1'	N 318°	End of Bridge
TBM #2	57.3'	N 158° 30'	Start Bridge
	66.2'	N 196°	End of Bridge

Desired Bridge Deck Elev. 1342.2'
Start of Bridge Existing ground Elev.1340.0'
End of Bridge Existing ground Elev. 1338.1'

Notes:
16-ft x 40-ft Steel Portable Bridge.
Wood Sills may be used, See LOG SILL DETAIL.
See Clauses 8.3-2 and 8.3-2.1 for bridge specifications.

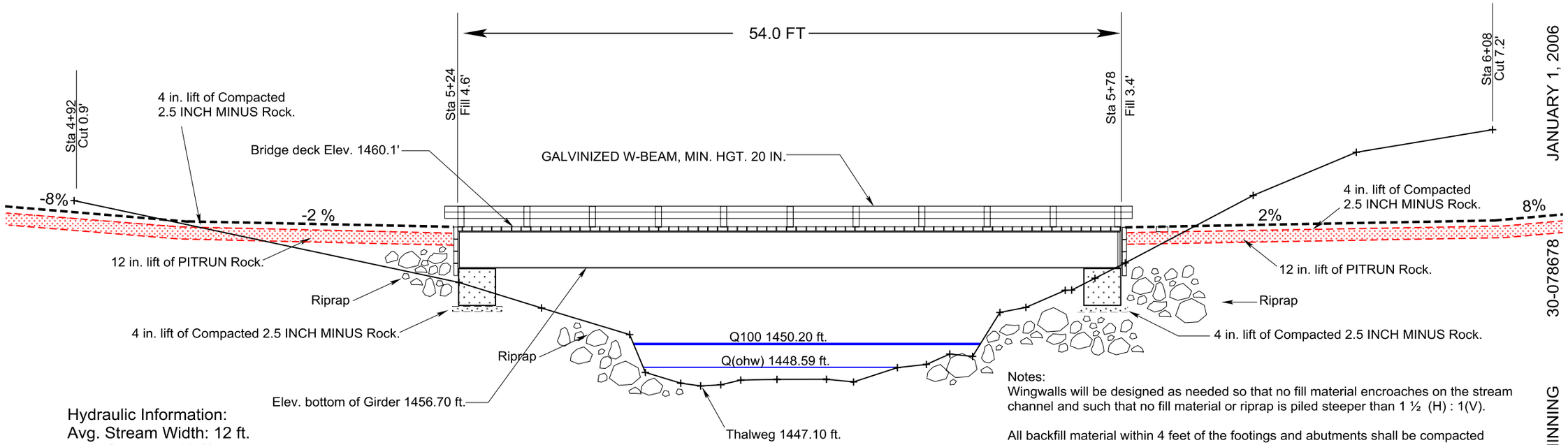
0 15'

BRIDGE INSTALLATION DETAIL
CG-2071 @ STATION 5+24 TO 5+78
(PAGE 1 OF 2)

Bridge Information:
Loading: AASTO HS-30.
Deflection: L/910.
Size: 16.0-ft x 54.0-ft.
Slope: < 2%.
W.B.W.G.*: 14 ft.
Vert. Clear**: 5.5 ft.

*Width Between Wheel Guards.
**Vertical Clearance above 100-yr flood level.

SE Section 2 T3N R6E
Snag Creek



Hydraulic Information:
Avg. Stream Width: 12 ft.
Avg. Gradient: 13 %.
Drainage Area: 800 acres.
Precipitation: 110 inches.
Q100 = 363 cfs.
Q100 elev. = 1450.20 ft.
Q(ohw) = 1448.59 ft.

0 10'

Notes:
Wingwalls will be designed as needed so that no fill material encroaches on the stream channel and such that no fill material or riprap is piled steeper than 1 ½ (H) : 1(V).

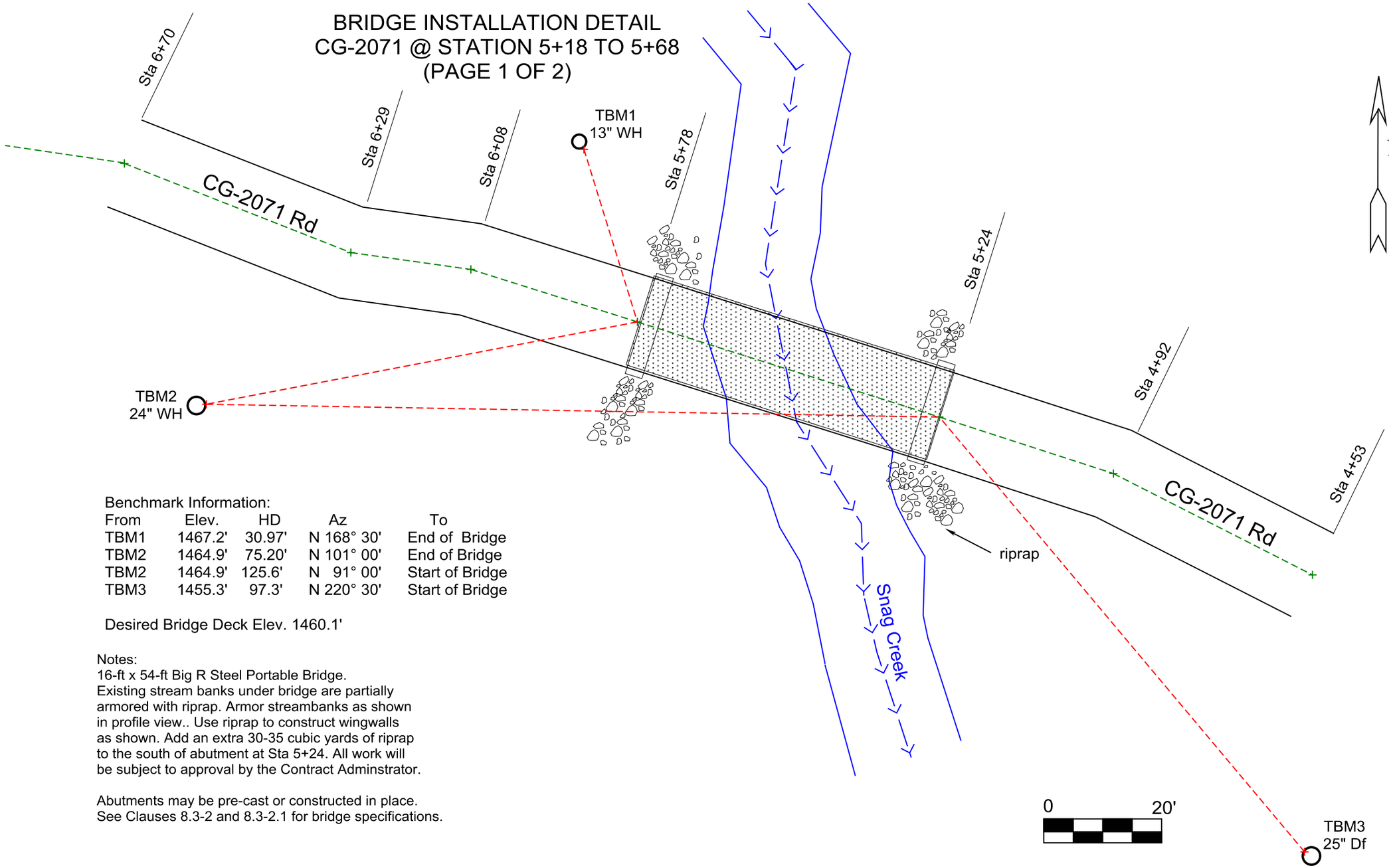
All backfill material within 4 feet of the footings and abutments shall be compacted with hand held vibratory compactor, plate compactor, or small smooth drum roller.

Purchaser is responsible construction staking the design provided and verifying elevations prior to purchasing materials or construction.

This drawing and elevations are for reference only. This drawing assumes 3 ft x 3 ft x 18 ft concrete abutments, girder depth 3 ft., 4 in. bridge deck, and 4 in. running planks, for a 44 in. total depth of bridge.

See WOOD BACKWALL DETAIL, FOOTING DETAIL, and BEARING DETAIL for further information. Big R bridge details available upon request.

BRIDGE INSTALLATION DETAIL
CG-2071 @ STATION 5+18 TO 5+68
(PAGE 1 OF 2)



Benchmark Information:

From	Elev.	HD	Az	To
TBM1	1467.2'	30.97'	N 168° 30'	End of Bridge
TBM2	1464.9'	75.20'	N 101° 00'	End of Bridge
TBM2	1464.9'	125.6'	N 91° 00'	Start of Bridge
TBM3	1455.3'	97.3'	N 220° 30'	Start of Bridge

Desired Bridge Deck Elev. 1460.1'

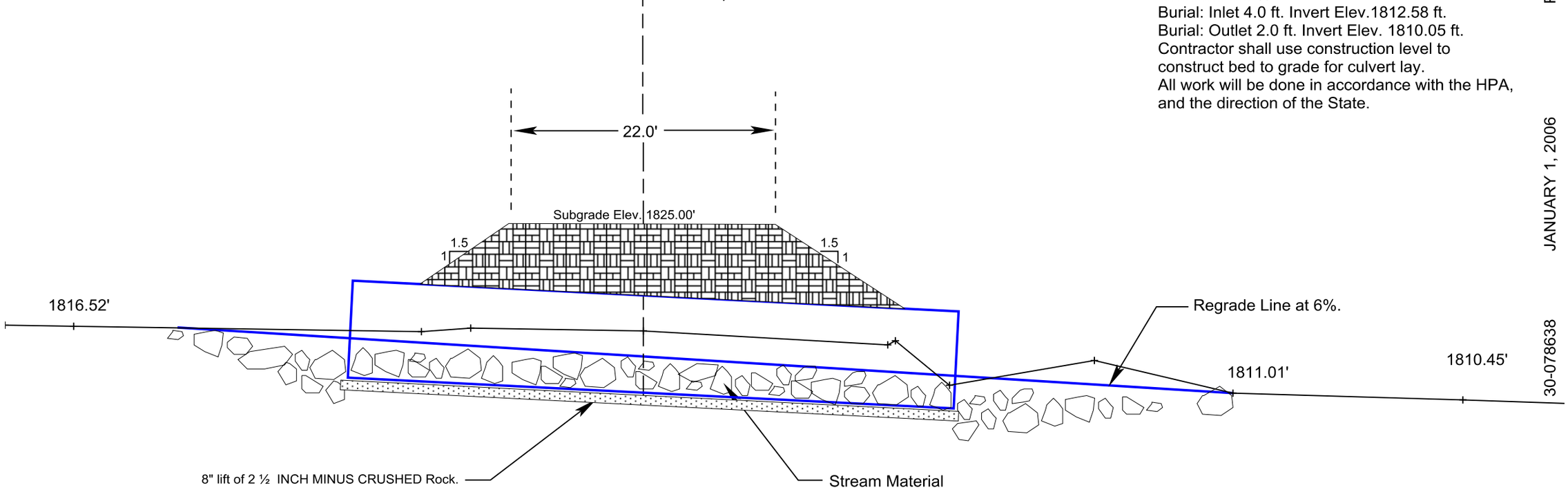
Notes:
16-ft x 54-ft Big R Steel Portable Bridge.
Existing stream banks under bridge are partially armored with riprap. Armor streambanks as shown in profile view.. Use riprap to construct wingwalls as shown. Add an extra 30-35 cubic yards of riprap to the south of abutment at Sta 5+24. All work will be subject to approval by the Contract Adminstrator.

Abutments may be pre-cast or constructed in place.
See Clauses 8.3-2 and 8.3-2.1 for bridge specifications.

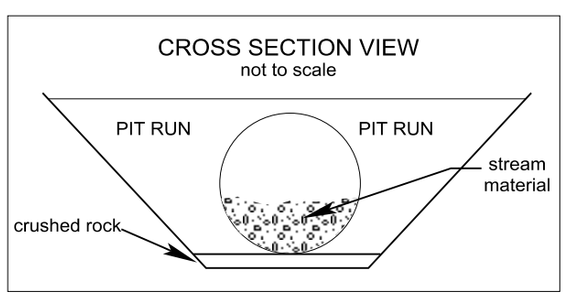
CULVERT INSTALLATION DETAIL
CG-2070 @ STATION 45+97
(PAGE 1 of 2)

SW SW 1/4 Sec. 12, T3N R6E

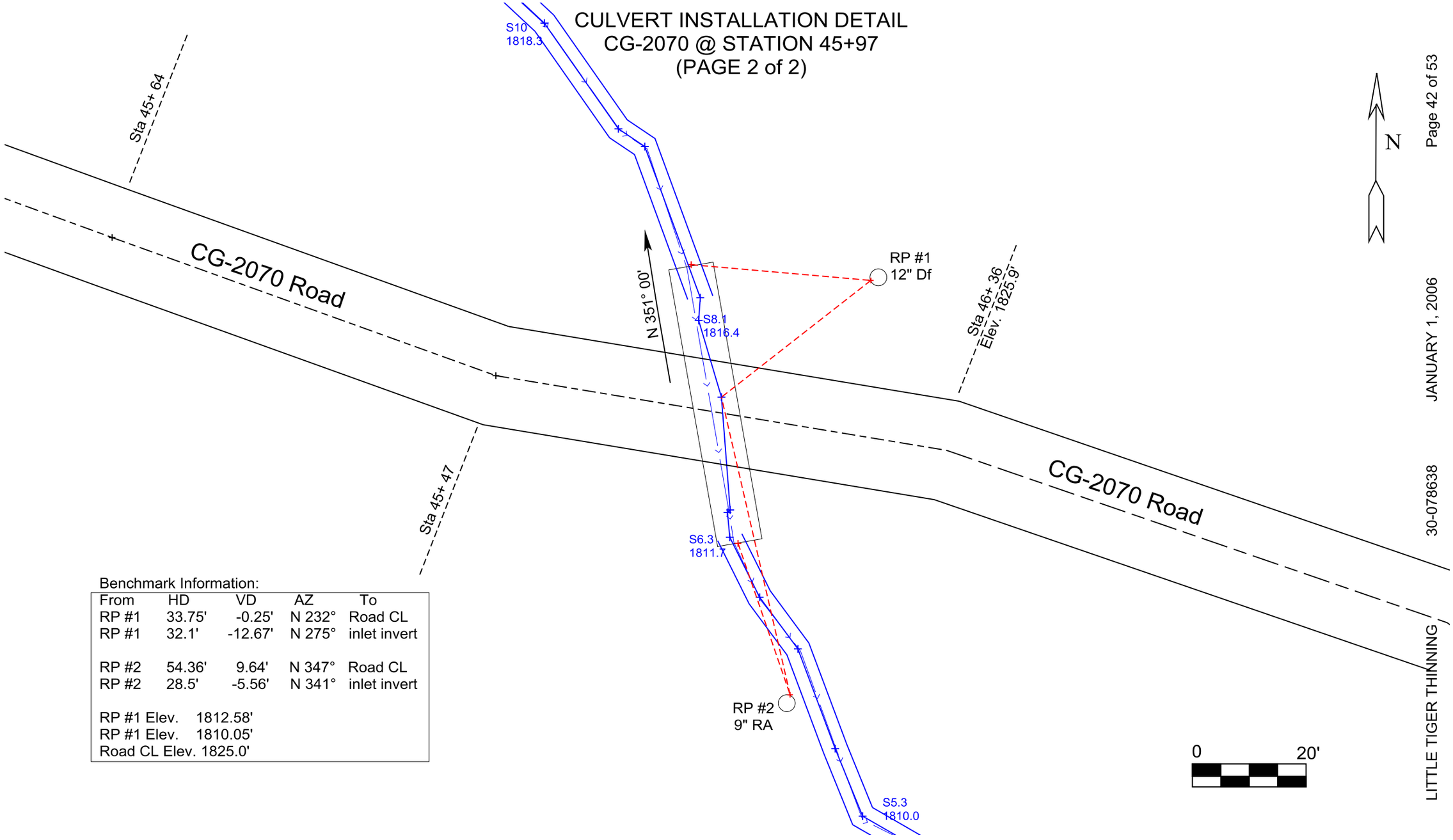
Culvert Information:
Span: 8.0 ft.
Length: 50 ft.
Thickness: 10 Gauge.
Coating: Aluminized.
Corrugations: 3 in. x 1 in.
Gradient: 5.0 %
Burial: Inlet 4.0 ft. Invert Elev.1812.58 ft.
Burial: Outlet 2.0 ft. Invert Elev. 1810.05 ft.
Contractor shall use construction level to construct bed to grade for culvert lay.
All work will be done in accordance with the HPA, and the direction of the State.



Hydraulic Information:
Avg. stream width: 4.48 ft.
Avg. stream gradient: 6.04%.
Area: 46 acres
MAP: ~110 inches.
Q100 = 39.4 cfs.
Place Stream Material inside culvert and at the inlet and outlet as shown.
Depth of Stream Material 2.5 - 3.8 ft.
Approximately 56 c.y.



CULVERT INSTALLATION DETAIL
CG-2070 @ STATION 45+97
(PAGE 2 of 2)



Benchmark Information:

From	HD	VD	AZ	To
RP #1	33.75'	-0.25'	N 232°	Road CL
RP #1	32.1'	-12.67'	N 275°	inlet invert
RP #2	54.36'	9.64'	N 347°	Road CL
RP #2	28.5'	-5.56'	N 341°	inlet invert

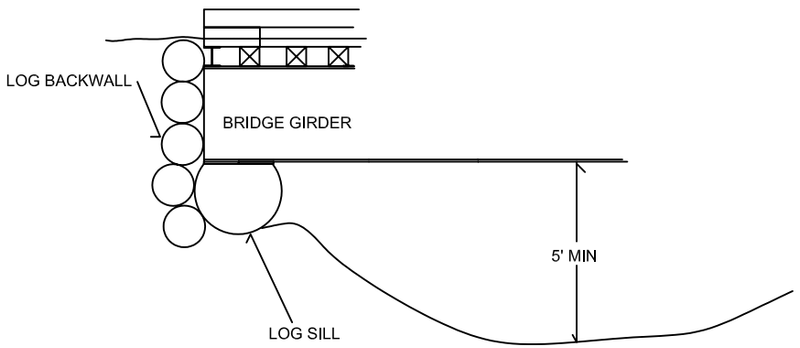
RP #1 Elev. 1812.58'
RP #1 Elev. 1810.05'
Road CL Elev. 1825.0'

JANUARY 1, 2006

30-078638

LITTLE TIGER THINNING

BRIDGE PLACEMENT



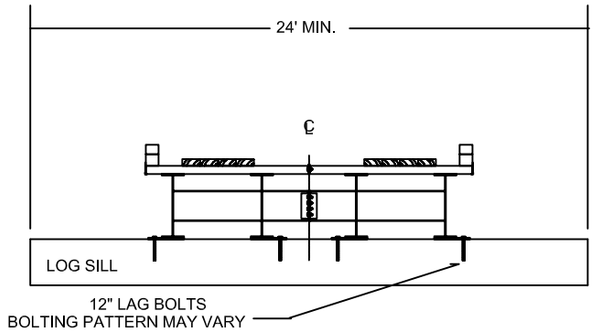
SILL LOCATIONS TO BE APPROVED BY CONTRACT ADMINISTRATOR.

SILL LOCATIONS TO BE EXCAVATED DOWNWARD
UNTIL SUITABLE FOUNDATION MATERIAL IS ENCOUNTERED,
SUBJECT TO APPROVAL BY THE CONTRACT ADMINISTRATOR.

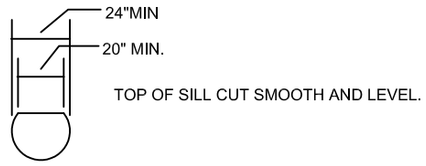
SILL LOG SHALL BE OF SUFFICIENT SIZE TO PROVIDE
SPECIFIED STREAM BED CLEARANCE.

30 YARDS OF RIP-RAP TO BE PLACED AS DIRECTED
BY THE CONTRACT ADMINISTRATOR.

LOG SILLS



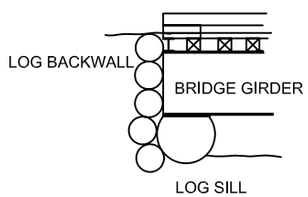
FRONT VIEW



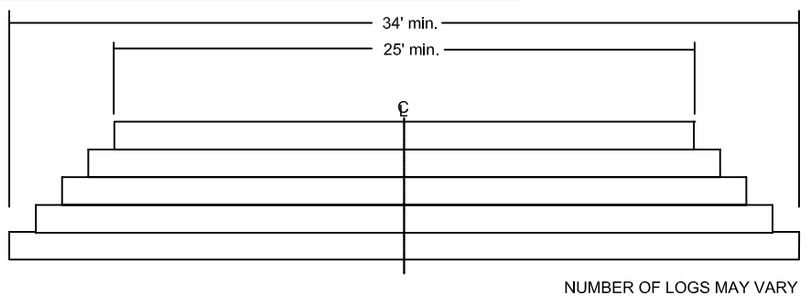
END VIEW

THE PURCHASER SHALL PROVIDE LOG SILLS AND LAG BOLTS. MINIMUM DIAMETERS SHALL BE 24" ON THE SMALL END. ALL MATERIAL IS SUBJECT TO WRITTEN APPROVAL BY THE CONTRACT ADMINISTRATOR.

LOG BACKWALL



END VIEW



ELEVATION

THE PURCHASER SHALL PROVIDE ALL LOGS FOR BACKWALL. MINIMUM DIAMETERS SHALL BE 6" ON THE SMALL END. ALL MATERIAL IS SUBJECT TO WRITTEN APPROVAL BY THE CONTRACT ADMINISTRATOR.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

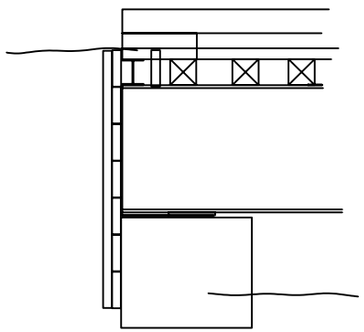
ROAD PLAN

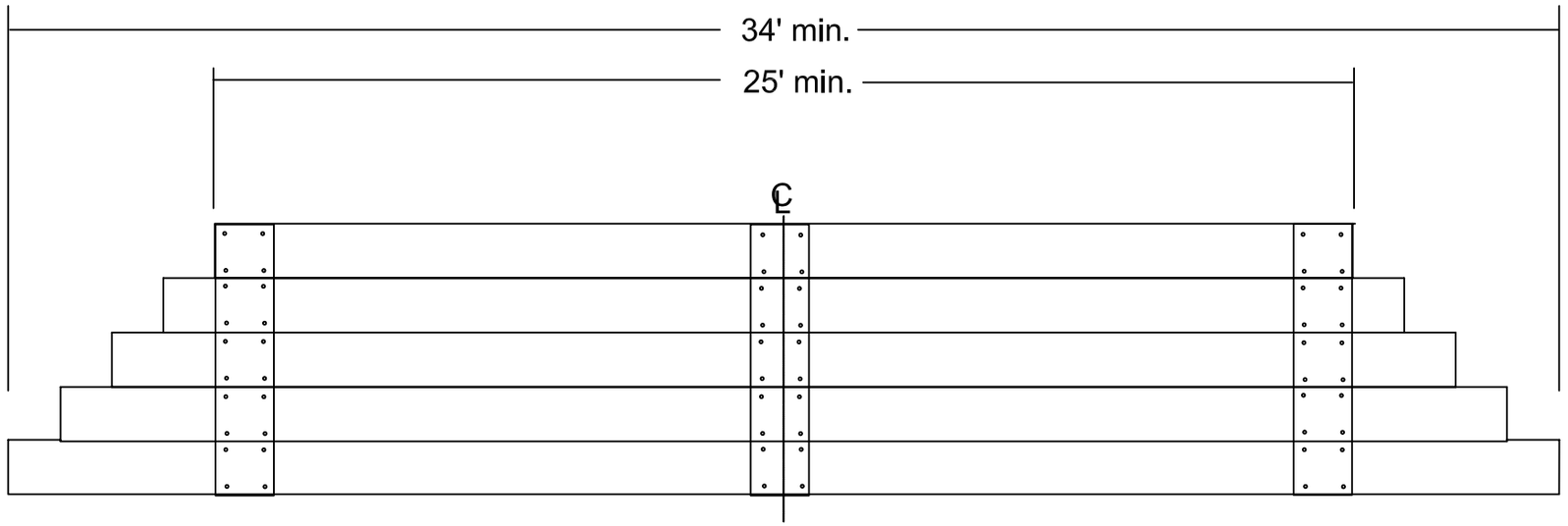
SALE NAME: LITTLE TIGER THINNING
ROAD PLAN DATE: JANUARY 1, 2006

LOG SILL DETAIL

CONTRACT NUMBER: 30-078638
SHEET 43 OF 53

WOOD BACKWALL





NUMBER OF PLANKS MAY VARY

END VIEW

ELEVATION

BACKFILL SHALL BE PLACED IN 12 INCH LIFTS AND COMPACTED WITH TWO PASSES OF JUMPING FOOT COMPACTOR. BUILD FILL TO LEVEL OF THE TOP RUNNING PLANK, SPILLING THE TOP 2 $\frac{1}{2}$ INCH LIFT ONTO DECK TRAYS. THE TOP TWO LIFTS OF THE FILL SHALL BE 12 INCHES OF PITRUN ROCK AND 3 INCHES OF 2 $\frac{1}{2}$ INCH MINUS ROCK. ALL MATERIAL SUBECT TO APPROVAL BY THE CONTRACT ADMINISTRATOR.

THE PURCHASER SHALL PROVIDE THE QUANTITIES AND LENGTHS OF PRESSURE TREATED DOUGLAS FIR NO. 2 OR BETTER, 4 INCH X 12 INCH PLANKS AS LISTED BELOW. ATTACH PLANKS WITH $\frac{5}{16}$" X 7" SPIKES OR LAG SCREWS.

QUANTITY	LENGTH
4	12' 6"
4-8	14'
4	16'
4	17'
3	5'

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

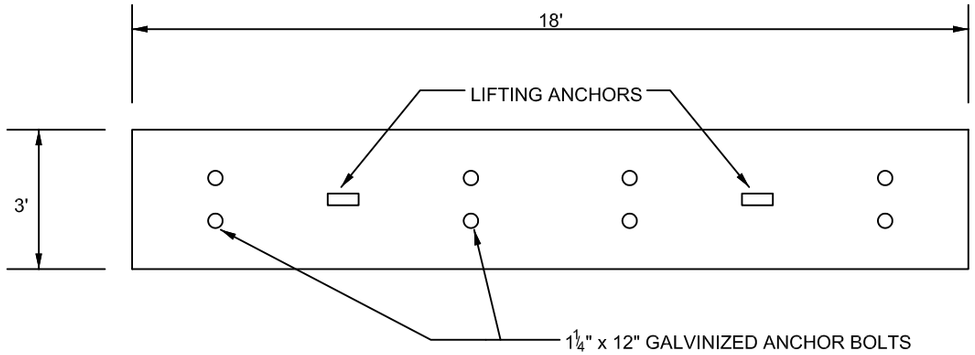
ROAD PLAN

SALE NAME: LITTLE TIGER THINNING
ROAD PLAN DATE: JANUARY 1, 2006

WOOD BACKWALL DETAIL

CONTRACT NUMBER: 30-078638
SHEET 44 OF 53

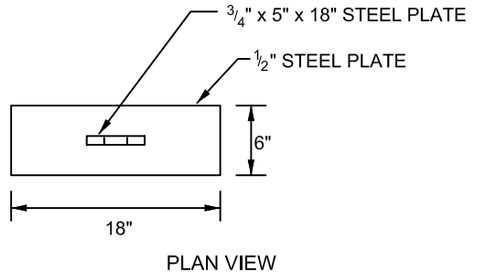
FOOTING DETAILS



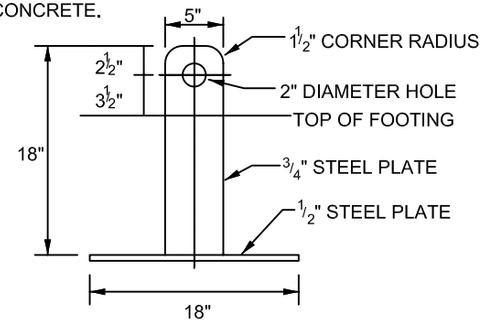
BOLT SPACING TO BE DETERMINED BY PURCHASER
BY MEASURING EXISTING SUPERSTRUCTURE.

FOOTING PLAN VIEW

LIFTING ANCHORS SHALL BE SET 1½ " INTO CONCRETE.

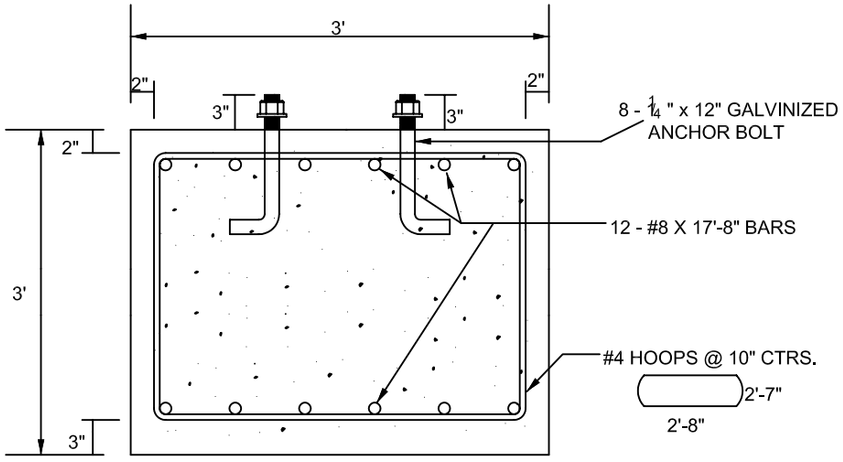


PLAN VIEW



ELEVATION

LIFTING ANCHOR



FOOTING CROSS SECTION

ALL CONCRETE SHALL CONFORM TO ASSHTO M85.
ALL CONCRETE SHALL REACH A MINIMUM 28 DAY STRENGTH OF 4000 PSI, BE LIMITED TO A MAXIMUM 4" SLUMP AND 6% AIR ENTRAINED. CONCRETE FOOTINGS SHALL NOT BE PICKED UNTIL A TEST CYLINDER IS BROKEN DEMONSTRATING A CONCRETE STRENGTH IN EXCESS OF 2500 PSI. COURSE AGGREGATE USED IN THE CONCRETE SHALL CONFORM TO ASSHTO M80, PASS A 1 1/2" SCREEN, AND CONTAIN A MAXIMUM OF 2% ORGANIC MATERIAL.

ALL REINFORCING STEEL SHALL CONFORM TO ASSHTO M31 GRADE 60. REINFORCING STEEL SHALL BE LAPPED AT LEAST 24 DIAMETERS AT ALL SPLICES AND SHALL BE PLACED AT LEAST 2" CLEAR OF THE NEAREST CONCRETE FACE OR AS SPECIFICALLY SHOWN ON THE DETAILS.

ALL BOLTS, NUTS, AND WASHERS SHALL BE GALVINIZED AND CONFORM TO ASSHTO M164.

STEEL PLATE USED FOR LIFTING ANCHORS SHALL CONFORM TO ASSHTO M222.
LIFTING ANCHORS SHALL BE PAINTED WITH THREE COATS OF A ZINC ENRICHED PAINT.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

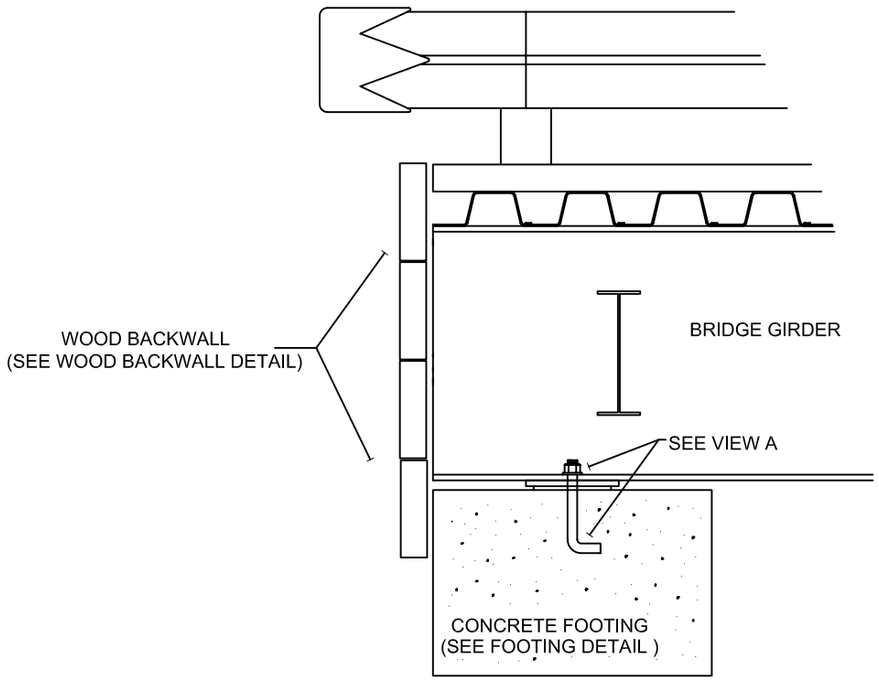
ROAD PLAN

SALE NAME: LITTLE TIGER THINNING
ROAD PLAN DATE:JANUARY 1, 2006

FOOTING DETAIL

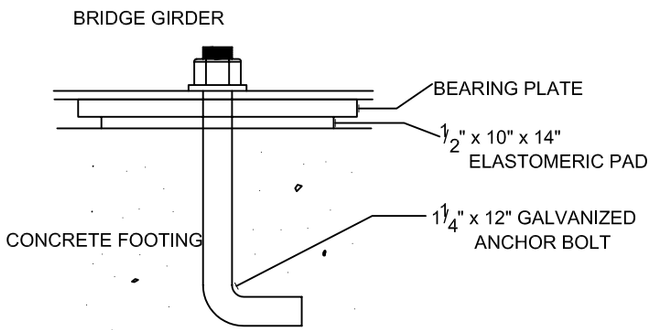
CONTRACT NUMBER: 30-078638
SHEET 45 OF 53

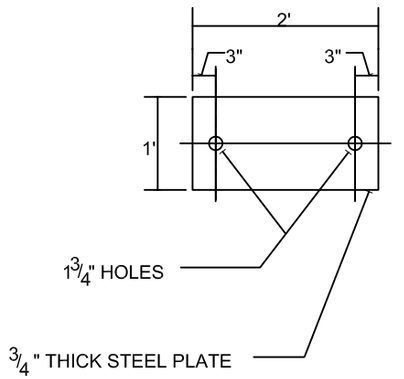
BEARING DETAILS



ABUTMENT

VIEW A





BEARING PLATE

THE PURCHASER SHALL PROVIDE 8 ELASTOMERIC PADS, AND ASSOCIATED HARDWARE.
ELASTOMERIC PADS SHALL CONFORM TO THE REQUIREMENTS OF ASSHTO M251.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

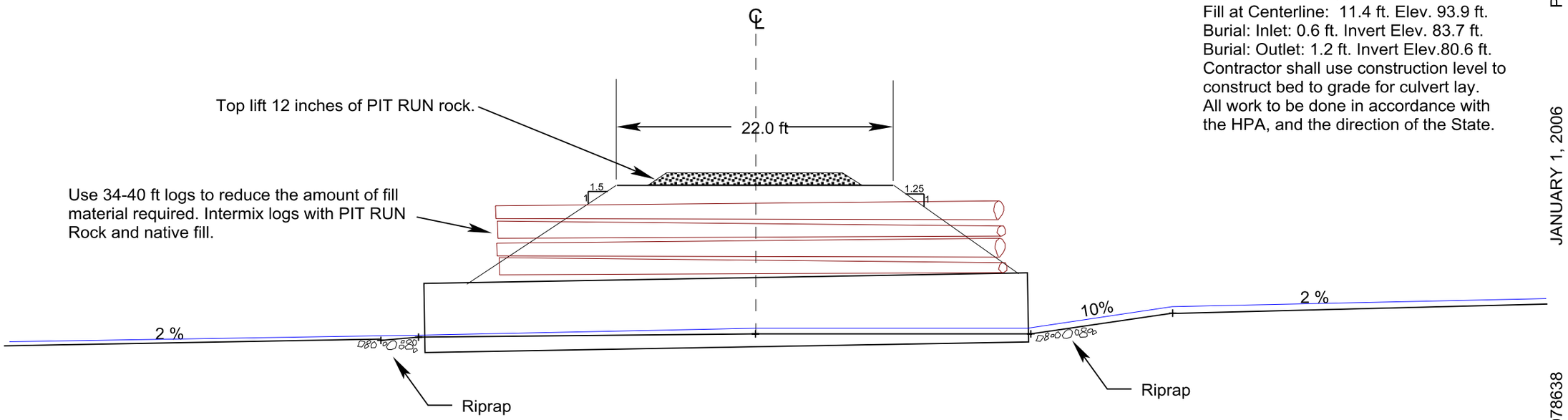
SALE NAME: LITTLE TIGER THINNING
ROAD PLAN DATE: JANUARY 1, 2006

BRIDGE BEARING DETAIL

CONTRACT NUMBER: 30-078638
SHEET 46 OF 53

TEMPORARY CULVERT INSTALLATION DETAIL
SPUR B @ STATION 2+01
(PAGE 1 OF 2)

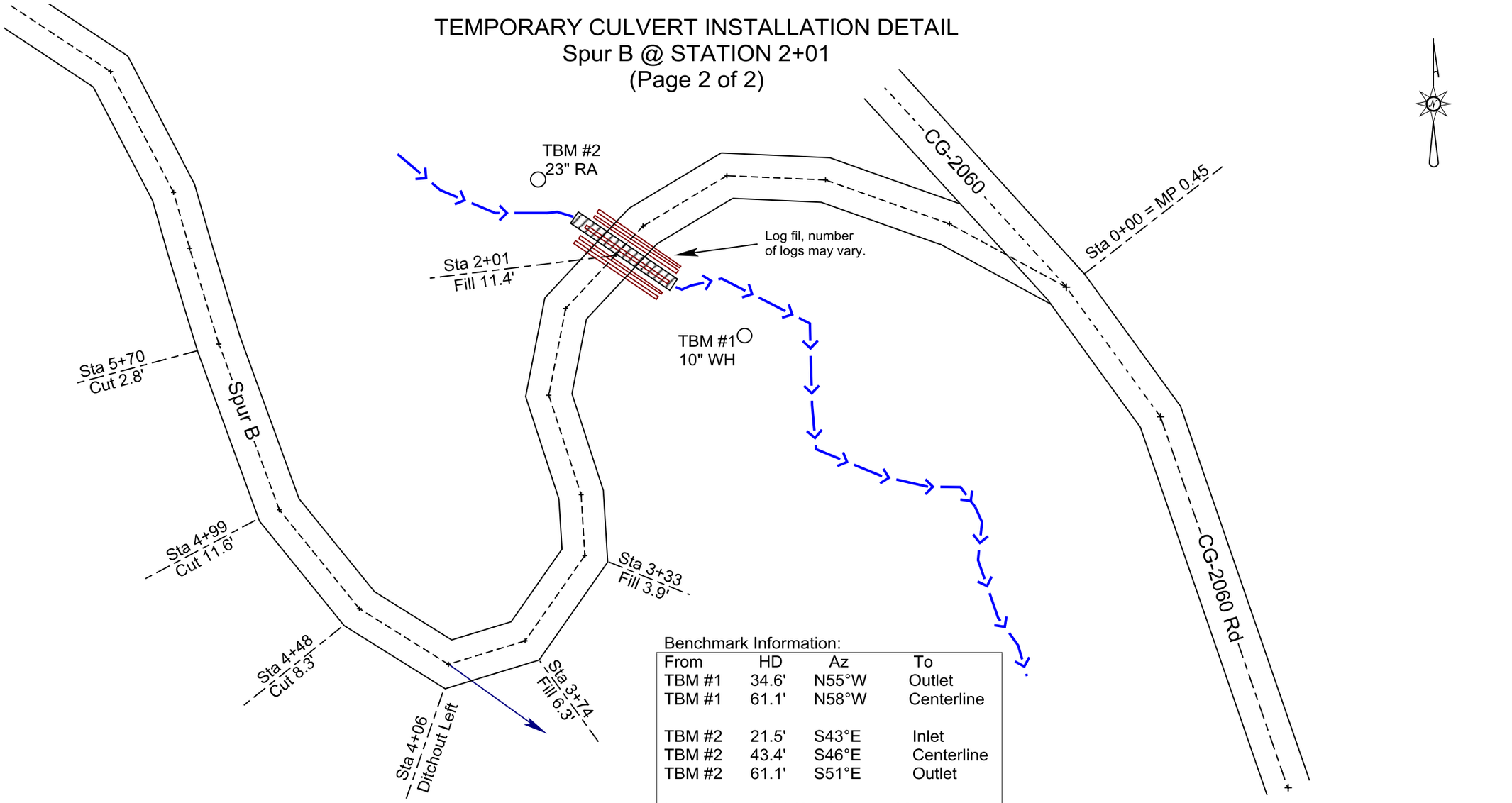
Culvert Information:
Span: 5.5 ft.
Length: 48.0 ft.
Thickness: 12 Gauge.
Corrugations: 3 in. x 1 in.
Gradient: 2.0 %.
Fill at Centerline: 11.4 ft. Elev. 93.9 ft.
Burial: Inlet: 0.6 ft. Invert Elev. 83.7 ft.
Burial: Outlet: 1.2 ft. Invert Elev.80.6 ft.
Contractor shall use construction level to construct bed to grade for culvert lay.
All work to be done in accordance with the HPA, and the direction of the State.



Hydraulic information:
Avg. Stream Width: 5.9 ft.
Avg. Stream Gradient: 4.76%.
Area: 129 acres.
Precipitation: 100 inches.
Q100 = 65.7 cfs.

0 10'

TEMPORARY CULVERT INSTALLATION DETAIL
Spur B @ STATION 2+01
(Page 2 of 2)



Benchmark Information:

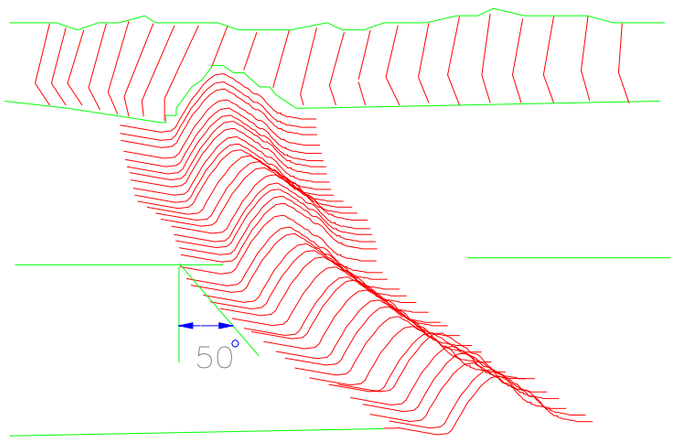
From	HD	Az	To
TBM #1	34.6'	N55°W	Outlet
TBM #1	61.1'	N58°W	Centerline
TBM #2	21.5'	S43°E	Inlet
TBM #2	43.4'	S46°E	Centerline
TBM #2	61.1'	S51°E	Outlet

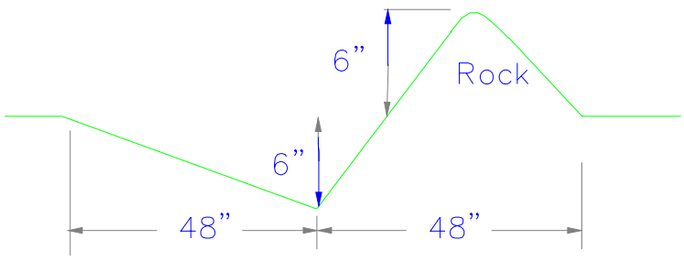
Inlet Elev.	84.3'	Invert	83.7'
Outlet Elev.	81.8'	Invert	80.7'
TBM #1 Elev. 83.9'			
TBM #2 Elev. 88.5'			

0 50'

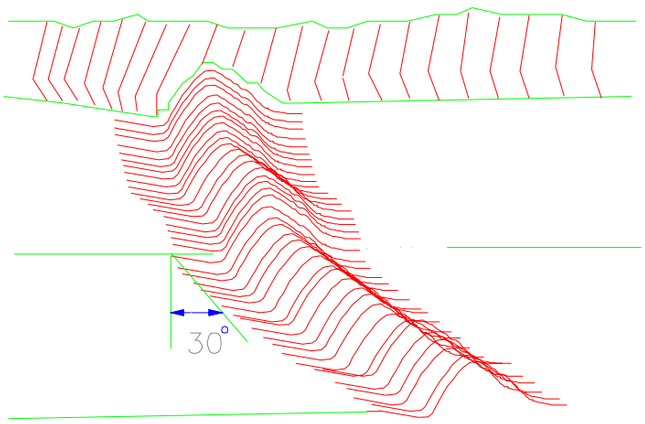
WATER BAR DETAILS

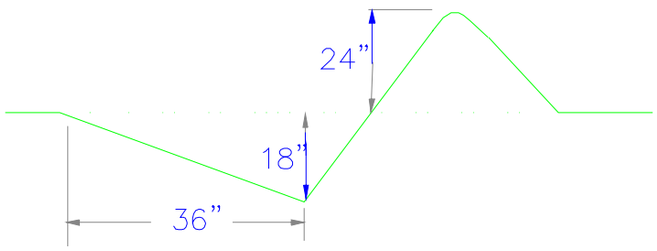
DRIVABLE WATER BAR



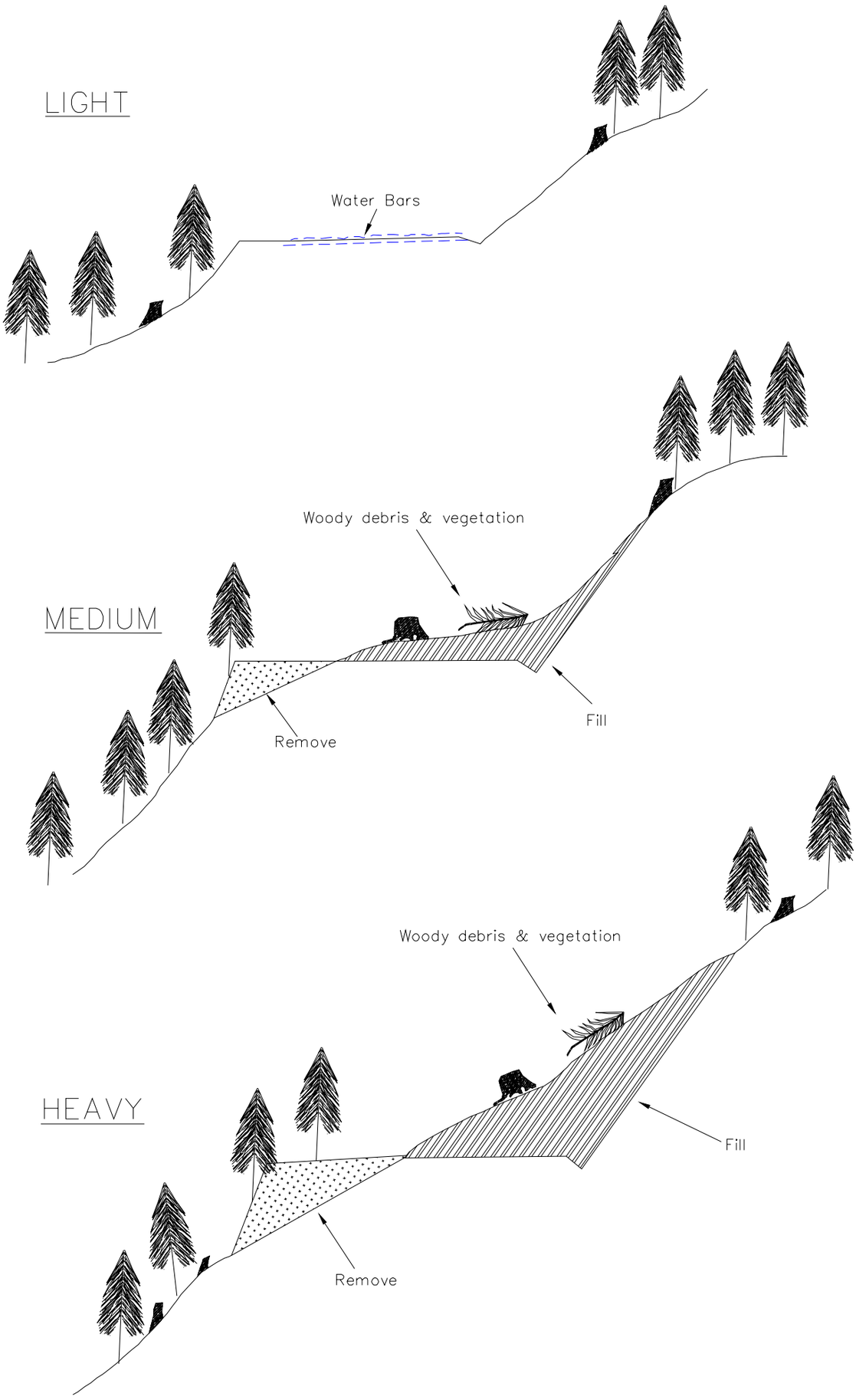


NON-DRIVABLE WATER BAR

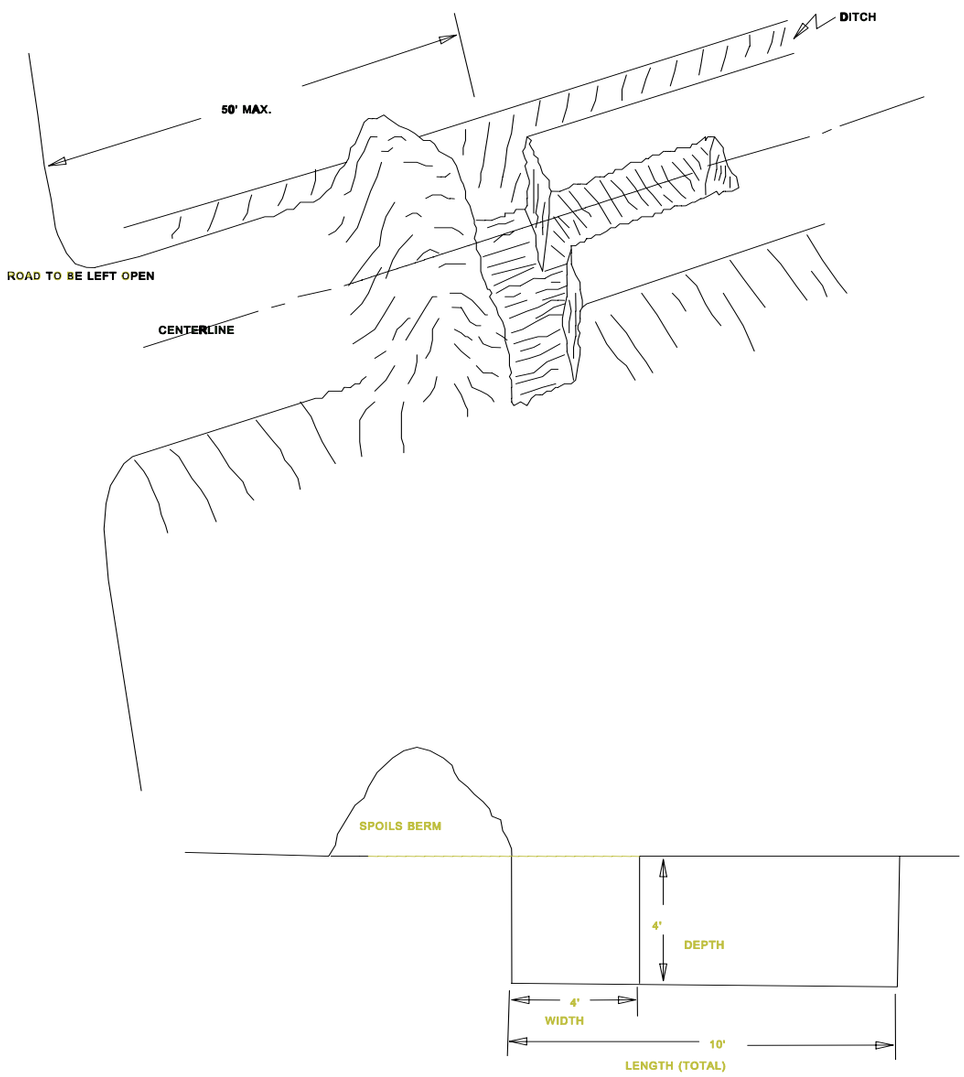




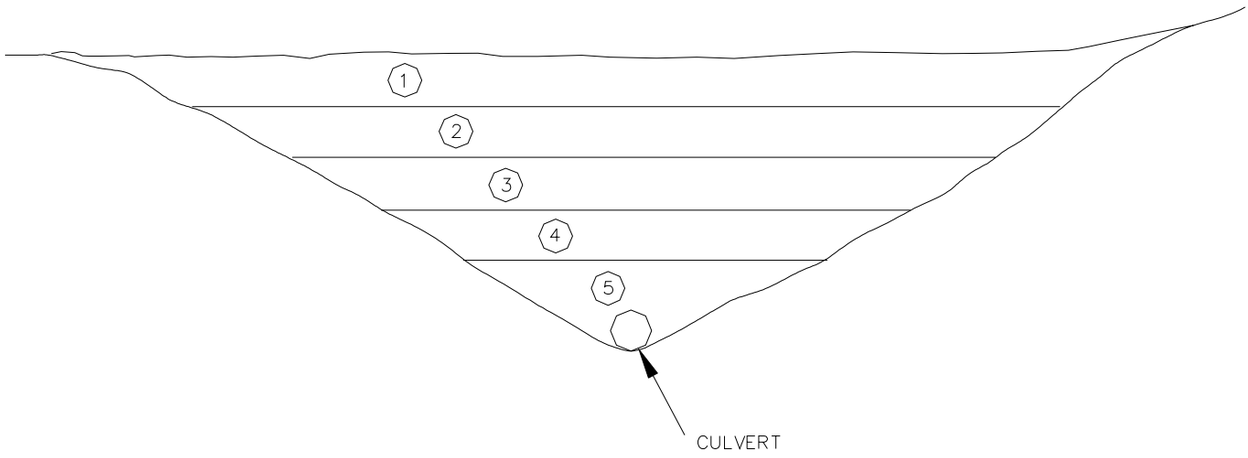
ROAD ABANDONMENT CROSS SECTIONS



"T" TANK TRAP DETAIL

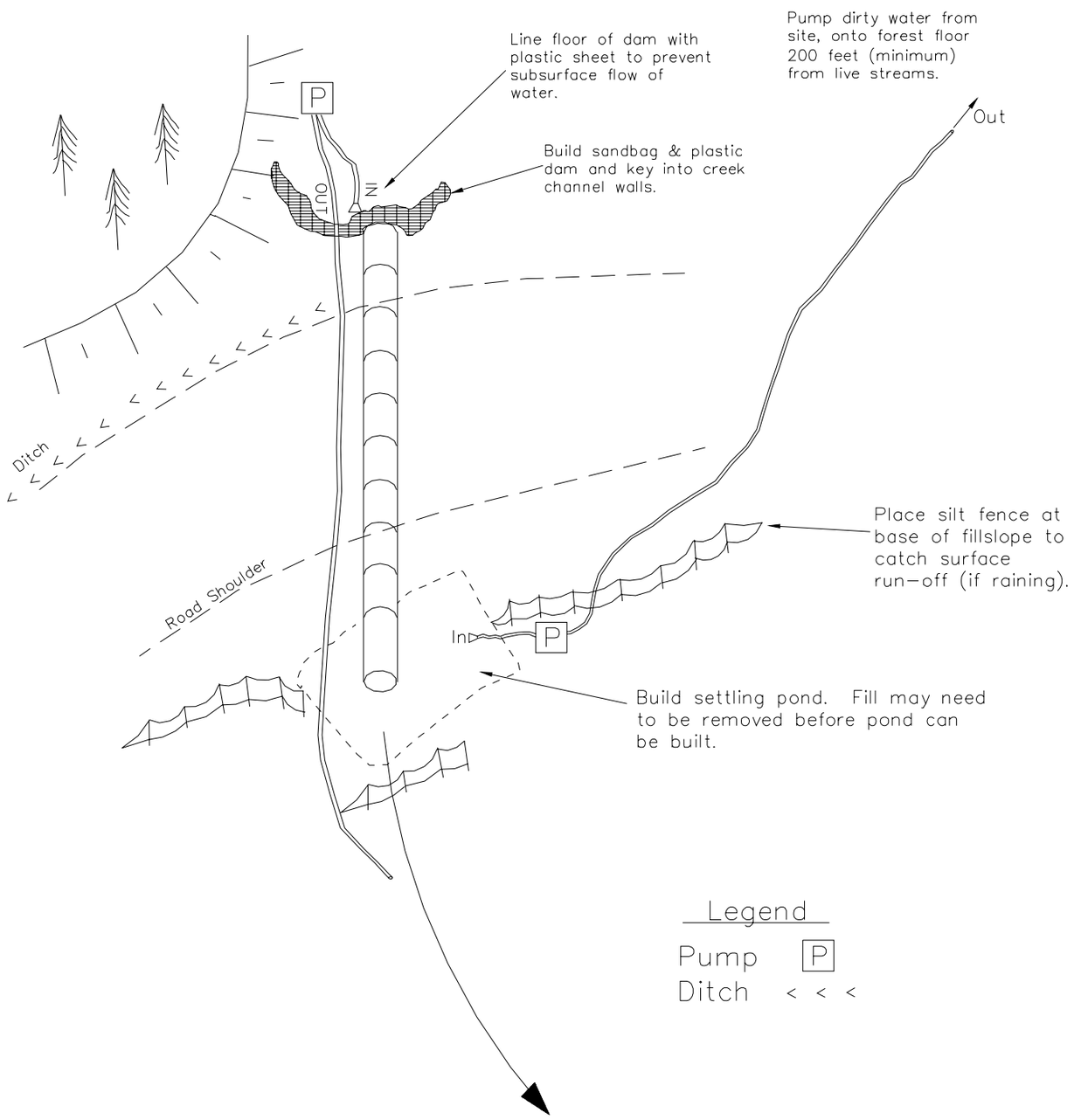


FILL REMOVAL DETAIL



- Remove fill in layers not to exceed 3 feet.
- Channel slopes shall be according to Section 6 – DRAINAGE and the Live Stream Culvert Removal Procedure

SETTLING POND AND PUMP DETAIL



STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
PACIFIC CASCADE REGION

CG-2002 ROCK PIT DEVELOPMENT AND RECLAMATION PLAN

SW ¼ of Section 12, Township 03 North, Range 06 East, W.M.

1. Mining shall begin in Area A and development shall continue into Area B as needed.

2. All vegetation including stumps shall be cleared a minimum of 20 feet beyond the top of all working faces. Trees shall be cleared to a minimum of ¾ of the height of the tallest tree adjacent to the pit. The Contractor shall maintain a minimum of 20 foot wide stripped area from the pit face at all times.

3. Overburden shall be pushed or end hauled to the designated waste area and compacted. Minimal acceptable compaction is achieved by placing waste material in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.

4. Root wads and organic debris larger than one cubic foot in volume shall be separated from overburden material and piled in the designated waste area.

5. Pit faces shall not exceed 35 feet in height and shall be sloped no steeper than ¼: 1. Faces with heights over 20 feet shall be sloped at ¼:1.

6. Working bench width shall be a minimum of 20 feet.

7. The pit floor shall have continuity of slope be left in a smooth and neat condition, providing drainage to the southeast at a minimum of 2 percent. All knobs, bumps, or extrusions shall be removed to the designated floor level by excavation or drill and shoot techniques.

8. The location and amount of material to be placed in a stockpile are subject to approval of the Contract Administrator. All stock piled material shall be maintained in a neat and useable condition.

9. Oversize material remaining in the rock source at the conclusion of use shall not exceed 5 percent of the total volume mined during that operation. Oversize material is defined as rock fragments larger than two feet in any direction. At the conclusion of operations, oversize material shall be placed as directed by the Contract Administrator.

10. At the end of operations, pit faces and walls shall be scaled and cleared of loose and overhanging material; benches shall have safety berms constructed or access blocked to highway vehicles. Upon completion of operations in the pit, the area will be left in a condition that will not endanger public safety, damage property, or be hazardous to animal or human life.

11. All exposed soil in the waste area shall be grass seeded in accordance with Road Plan clause 5.4-3.1.

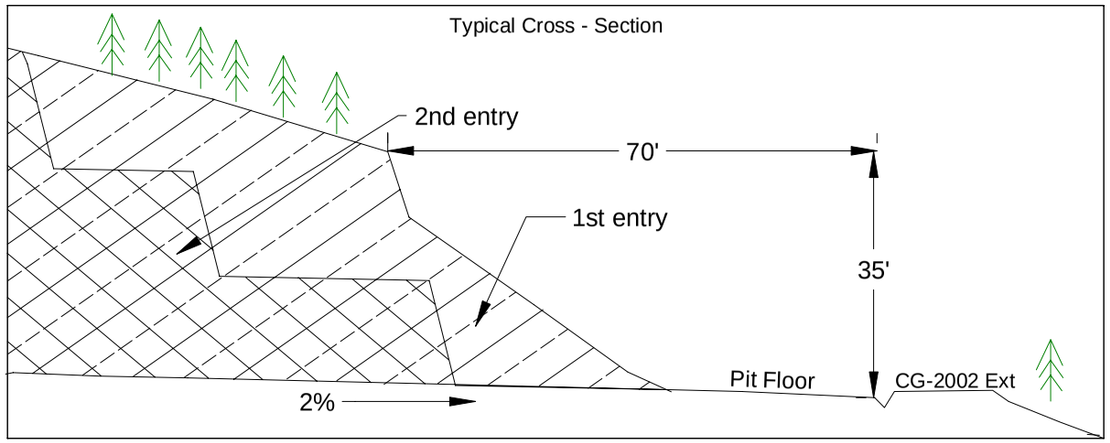
12. All operations shall be carried out in compliance with all regulations of:
    a. Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations@ (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration.
    b. “Safety Standards – Metal and Nonmetallic Mines, Quarries, Pits, and Crushing Operations” (296-61 WAC), Washington Department of Labor and Industries.
    c. “Safety Standards for Construction Work” (296-155 WAC), Washington Department of Labor and Industries.

13. The Operator shall submit an informational drilling and shooting plan to the Contract Administrator 10 working days prior to any drilling (Form #M-126PAC).

14. The pit area shall be worked and left in a condition that future operations may proceed in an orderly manner.

15. Upon completion of operations, the site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition. Purchaser shall ask Contract Administrator for written approval of final rock source condition and compliance with the terms of this plan.

January 1, 2006.



DEVELOPMENT

Overburden and debris shall be deposited in areas approved by the State Representative. Waste material should be compacted in layers less than 2 feet in depth.

Mining shall begin in Area A and continue into Area B as needed. Stockpile in main pit floor.

Material shall be removed in such a manner so that no working face exceeds a height greater than 35 feet. Faces with heights over 30 feet shall be sloped at 1/4:1. If conditions are such that a benched removal is possible, pit material shall be removed where bench width shall be no smaller than 15 feet.

Minimum clearing distance from the pit edge shall be 75% of the height of the tallest tree. Contractor shall maintain a 15 foot wide stripped area from the pit face at all times.

Stockpiling operations shall be accomplished in the area as approved by the State Representative. All stock piled material shall be maintained in a neat and usable condition.

All operations must be carried out in compliance with Washington Department of Labor and Industies.

RECLAMATION

Reclamation will be achieved by properly removing materials as stated in the Development plan.

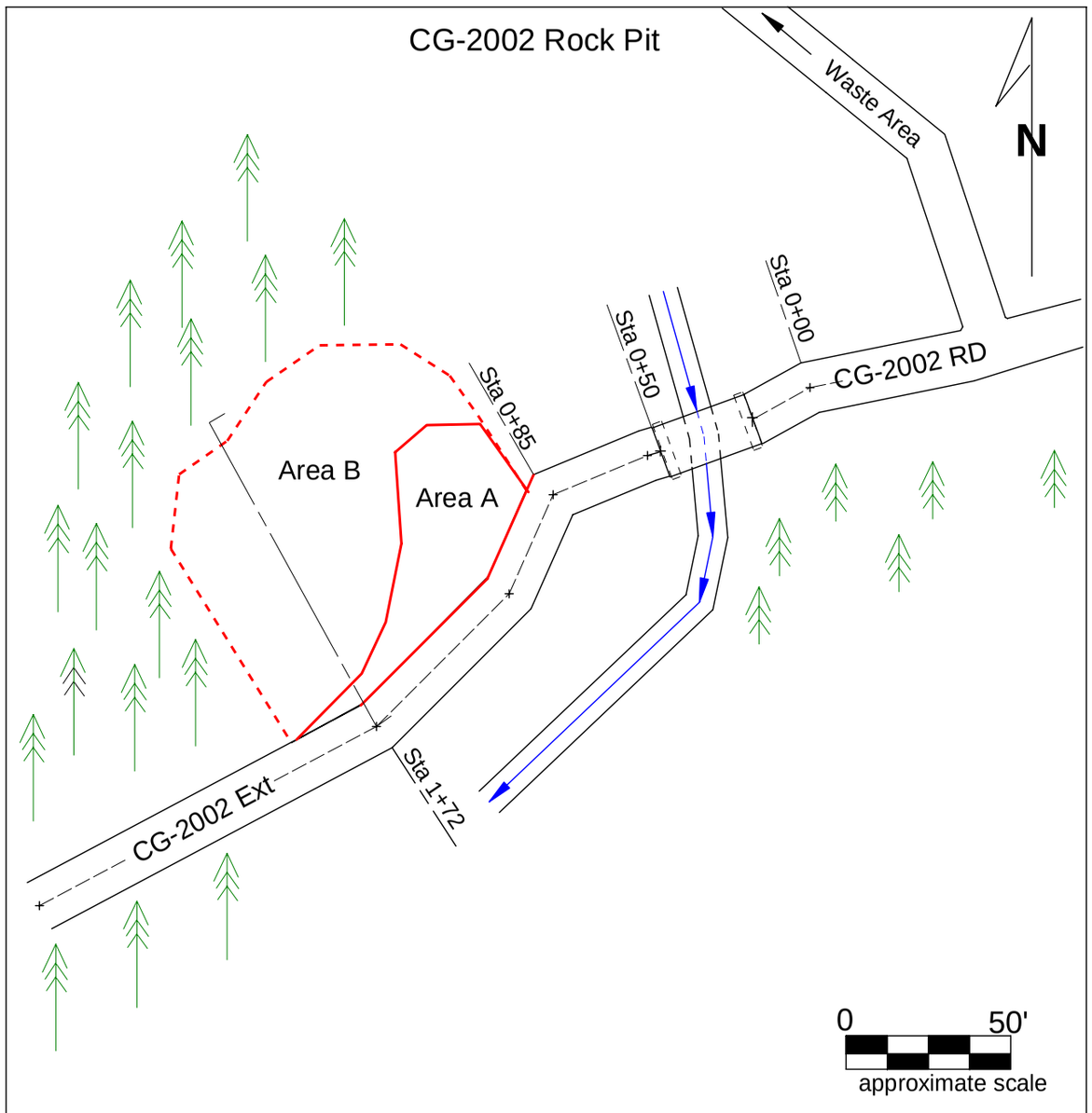
Upon completion of operations in the pit, the area will be left in a condition that will not endanger public safety, damage property, or be hazardous to animal or human life.

Pit floor shall be left in a smooth and neat condition, outsloped a minimum of 2% to provide site drainage.

The pit area shall be worked and left in condition that future operations may proceed in an orderly manner.

Upon completion of operations, the site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition.

CG-2002 Rock Pit Plan
Little Tiger Thinning
SW 1/4 of Sec. 12,
T3N R6E, W.M.



JANUARY 1, 2006

30-078638

LITTLE TIGER THINNING

January 1, 2006

State of Washington
Department of Natural Resources
Pacific Cascade Region

Yacolt District

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
PACIFIC CASCADE REGION

CG-2080 ROCK PIT DEVELOPMENT AND RECLAMATION PLAN

NE ¼ of Section 14, Township 03 North, Range 06 East, W.M.

1. Mining shall begin in Area A and development shall continue into Area B as needed.

2. All vegetation including stumps shall be cleared a minimum of 20 feet beyond the top of all working faces. Trees shall be cleared to a minimum of ¾ of the height of the tallest tree adjacent to the pit. The Contractor shall maintain a minimum of 20 foot wide stripped area from the pit face at all times.

3. Overburden shall be pushed or end hauled to the designated waste area near junction of CG-2080 and CG-2080B, and compacted. Minimal acceptable compaction is achieved by placing waste material in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.

4. Root wads and organic debris larger than one cubic foot in volume shall be separated from overburden material and piled in the designated waste area.

5. Pit faces shall not exceed 35 feet in height and shall be sloped no steeper than ¼: 1. Faces with heights over 20 feet shall be sloped at ¼:1.

6. Working bench width shall be a minimum of 20 feet.

7. The pit floor shall have continuity of slope be left in a smooth and neat condition, providing drainage to the southeast at a minimum of 2 percent. All knobs, bumps, or extrusions shall be removed to the designated floor level by excavation or drill and shoot techniques.

8. All stock piled material shall be maintained in a neat and useable condition.

9. Oversize material remaining in the rock source at the conclusion of use shall not exceed 5 percent of the total volume mined during that operation. Oversize material is defined as rock fragments larger than two feet in any direction. At the conclusion of operations, oversize material shall be placed as directed by the Contract Administrator.

10. At the end of operations, pit faces and walls shall be scaled and cleared of loose and overhanging material; benches shall have safety berms constructed or access blocked to highway vehicles. Upon completion of operations in the pit, the area will be left in a condition that will not endanger public safety, damage property, or be hazardous to animal or human life.

11. All exposed soil in the waste area shall be grass seeded in accordance with Road Plan clause 5.4-3.1.

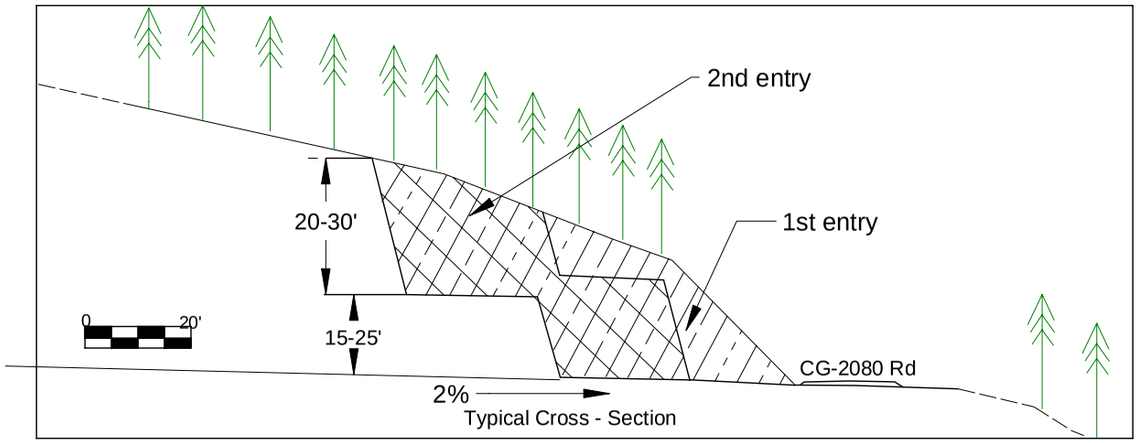
12. All operations shall be carried out in compliance with all regulations of:
    a. Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations@ (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration.
    b. “Safety Standards – Metal and Nonmetallic Mines, Quarries, Pits, and Crushing Operations” (296-61 WAC), Washington Department of Labor and Industries.
    c. “Safety Standards for Construction Work” (296-155 WAC), Washington Department of Labor and Industries.

13. The Operator shall submit an informational drilling and shooting plan to the Contract Administrator 10 working days prior to any drilling (Form #M-126PAC).

14. The pit area shall be worked and left in a condition that future operations may proceed in an orderly manner.

15. Upon completion of operations, the site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition. Purchaser shall ask Contract Administrator for written approval of final rock source condition and compliance with the terms of this plan.

January 1, 2006.



DEVELOPMENT

Overburden and debris shall be deposited in areas approved by the State Representative. Waste material should be compacted in layers less than 2 feet in depth.

Mining shall begin in Area A and continue into Area B as needed. Stockpile in main pit floor.

Material shall be removed in such a manner so that no working face exceeds a height greater than 35 feet. Faces with heights over 30 feet shall be sloped at 1/4:1. If conditions are such that a benched removal is possible, pit material shall be removed where bench width shall be no smaller than 15 feet.

Minimum clearing distance from the pit edge shall be 75% of the height of the tallest tree. Contractor shall maintain a 15 foot wide stripped area from the pit face at all times.

Stockpiling operations shall be accomplished in the area as approved by the State Representative. All stock piled material shall be maintained in a neat and usable condition.

All operations must be carried out in compliance with Washington Department of Labor and Industies.

RECLAMATION

Reclamation will be achieved by properly removing materials as stated in the Development plan.

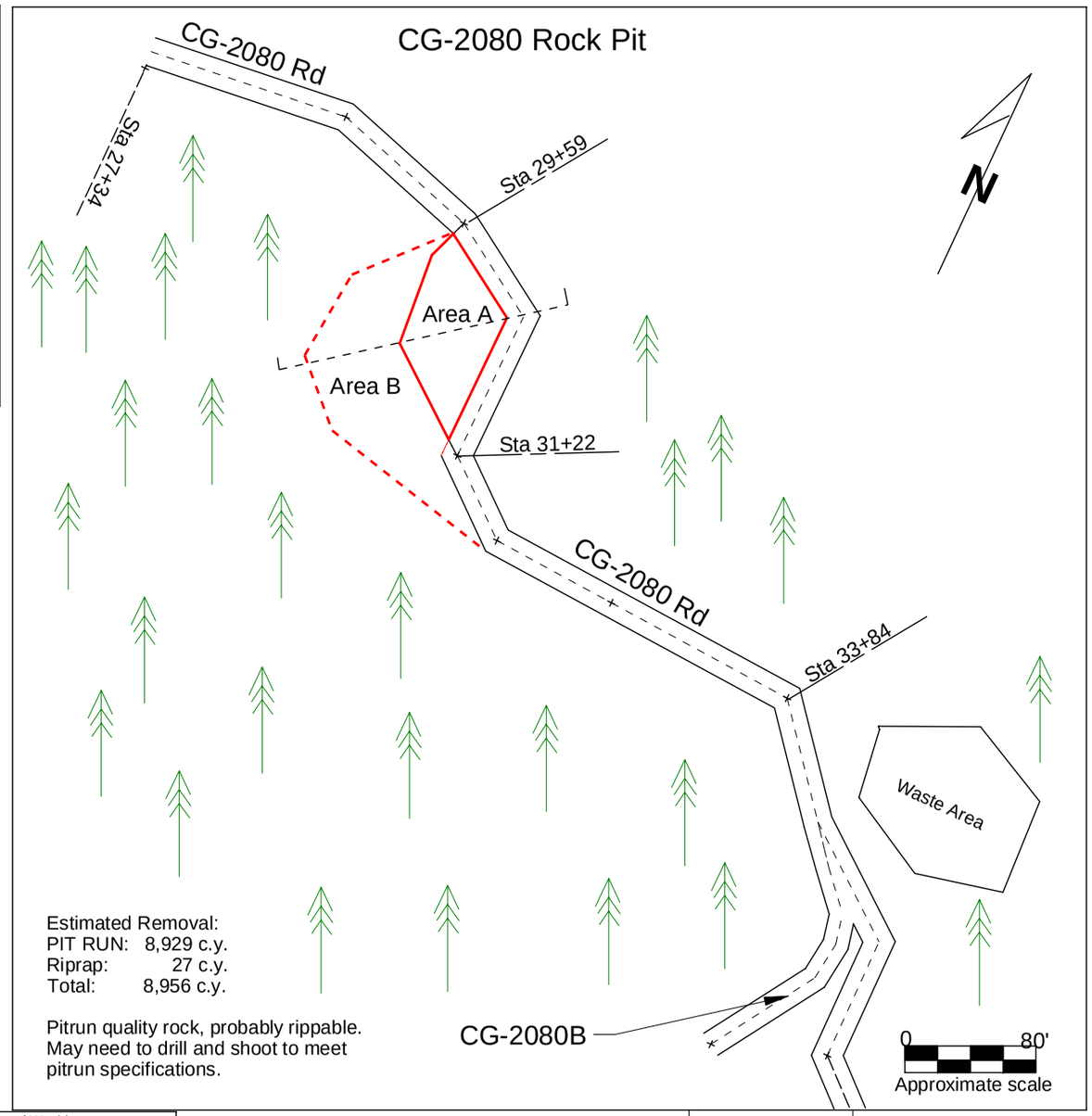
Upon completion of operations in the pit, the area will be left in a condition that will not endanger public safety, damage property, or be hazardous to animal or human life.

Pit floor shall be left in a smooth and neat condition, outsloped a minimum of 2% to provide site drainage.

The pit area shall be worked and left in condition that future operations may proceed in an orderly manner.

Upon completion of operations, the site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition.

CG-2080 Rock Pit Plan
Little Tiger Thinning
NE 1/4 of Sec. 14,
T3N R6E, W.M.



LITTLE TIGER THINNING 30-078638 JANUARY 1, 2006

January 1, 2006

State of Washington
Department of Natural Resources
Pacific Cascade Region

Yacolt District

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
PACIFIC CASCADE REGION

CG-2090 ROCK PIT DEVELOPMENT AND RECLAMATION PLAN

NW ¼ of Section 15, Township 03 North, Range 06 East, W.M.

1. Mining shall begin in Area A and development shall continue into Area B as needed.

2. All vegetation including stumps shall be cleared a minimum of 20 feet beyond the top of all working faces. Trees shall be cleared to a minimum of ¾ of the height of the tallest tree adjacent to the pit. The Contractor shall maintain a minimum of 20 foot wide stripped area from the pit face at all times.

3. Overburden shall be pushed or end hauled to the designated waste area and compacted. Minimal acceptable compaction is achieved by placing waste material in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts. The location and amount of material to be placed in the waste areas are subject to approval of the Contract Administrator.

4. Root wads and organic debris larger than one cubic foot in volume shall be separated from overburden material and piled in the designated waste area.

5. Pit faces shall not exceed 35 feet in height and shall be sloped no steeper than ¼: 1. Faces with heights over 20 feet shall be sloped at ¼:1.

6. Working bench width shall be a minimum of 20 feet.

7. The pit floor shall have continuity of slope be left in a smooth and neat condition, providing drainage to the southeast at a minimum of 2 percent. All knobs, bumps, or extrusions shall be removed to the designated floor level by excavation or drill and shoot techniques.

8. All stock piled material shall be maintained in a neat and useable condition.

9. Oversize material remaining in the rock source at the conclusion of use shall not exceed 5 percent of the total volume mined during that operation. Oversize material is defined as rock fragments larger than two feet in any direction. At the conclusion of operations, oversize material shall be placed as directed by the Contract Administrator.

10. At the end of operations, pit faces and walls shall be scaled and cleared of loose and overhanging material; benches shall have safety berms constructed or access blocked to highway vehicles. Upon completion of operations in the pit, the area will be left in a condition that will not endanger public safety, damage property, or be hazardous to animal or human life.

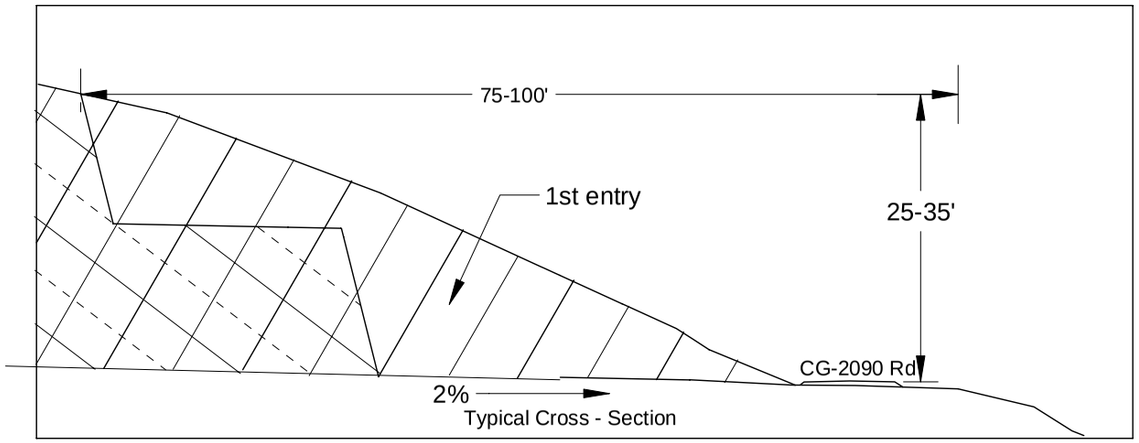
11. All exposed soil in the waste area shall be grass seeded in accordance with Road Plan clause 5.4-3.1.

12. All operations shall be carried out in compliance with all regulations of:
    a. Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations@ (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration.
    b. “Safety Standards – Metal and Nonmetallic Mines, Quarries, Pits, and Crushing Operations” (296-61 WAC), Washington Department of Labor and Industries.
    c. “Safety Standards for Construction Work” (296-155 WAC), Washington Department of Labor and Industries.

13. The Operator shall submit an informational drilling and shooting plan to the Contract Administrator 10 working days prior to any drilling (Form #M-126PAC).

14. The pit area shall be worked and left in a condition that future operations may proceed in an orderly manner.

15. Upon completion of operations, the site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition. Purchaser shall ask Contract Administrator for written approval of final rock source condition and compliance with the terms of this plan.



DEVELOPMENT

Overburden and debris shall be deposited in areas approved by the State Representative. Waste material should be compacted in layers less than 2 feet in depth.

Mining shall begin in Area A and continue into Area B as needed. Stockpile in main pit floor.

Material shall be removed in such a manner so that no working face exceeds a height greater than 35 feet. Faces with heights over 30 feet shall be sloped at 1/4:1. If conditions are such that a benched removal is possible, pit material shall be removed where bench width shall be no smaller than 15 feet.

Minimum clearing distance from the pit edge shall be 75% of the height of the tallest tree. Contractor shall maintain a 15 foot wide stripped area from the pit face at all times.

Stockpiling operations shall be accomplished in the area as approved by the State Representative. All stock piled material shall be maintained in a neat and usable condition.

All operations must be carried out in compliance with Washington Department of Labor and Industies.

RECLAMATION

Reclamation will be achieved by properly removing materials as stated in the Development plan.

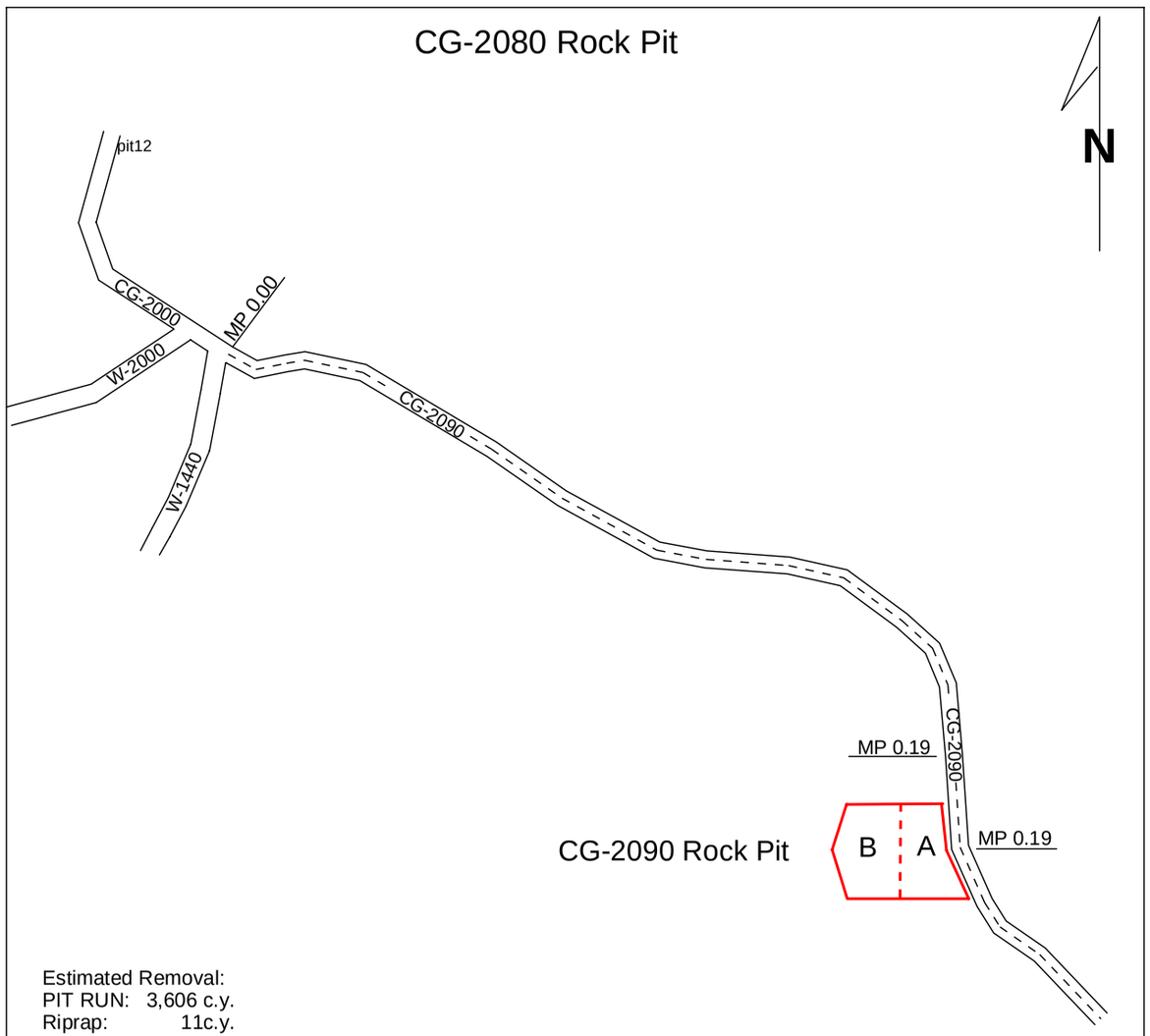
Upon completion of operations in the pit, the area will be left in a condition that will not endanger public safety, damage property, or be hazardous to animal or human life.

Pit floor shall be left in a smooth and neat condition, outsloped a minimum of 2% to provide site drainage.

The pit area shall be worked and left in condition that future operations may proceed in an orderly manner.

Upon completion of operations, the site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition.

CG-2090 Rock Pit Plan
Little Tiger Thinning
NW 1/4 of Sec. 15, T3N R6E, W.M.



Estimated Removal:
PIT RUN: 3,606 c.y.
Riprap: 11c.y.
Total: 3,617 c.y.

Pitrun quality rock, probably rippable. May need to drill and shoot to meet pitrun specifications.

JANUARY 1, 2006

30-078638

LITTLE TIGER THINNING

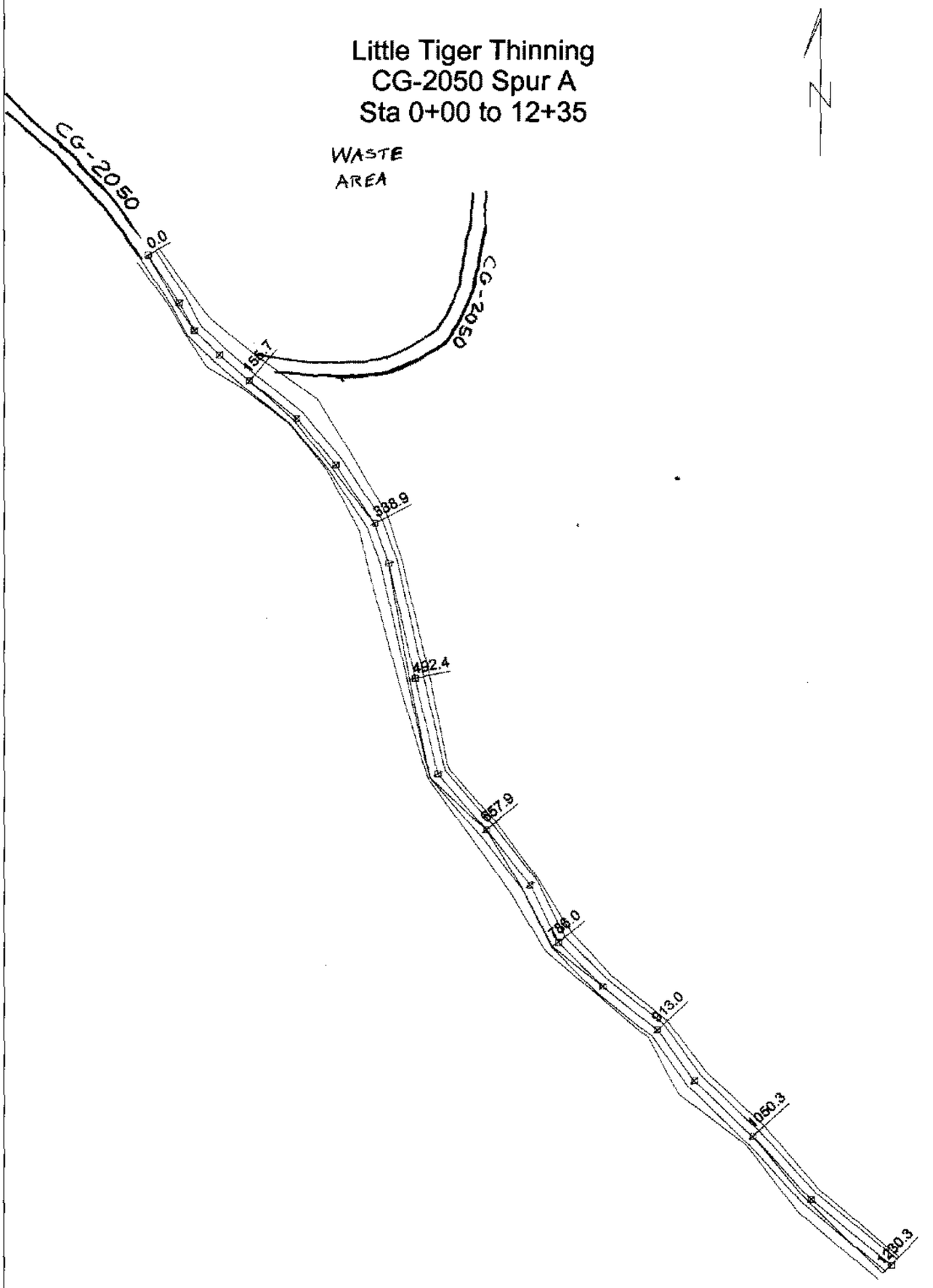
January 1, 2006

State of Washington
Department of Natural Resources
Pacific Cascade Region

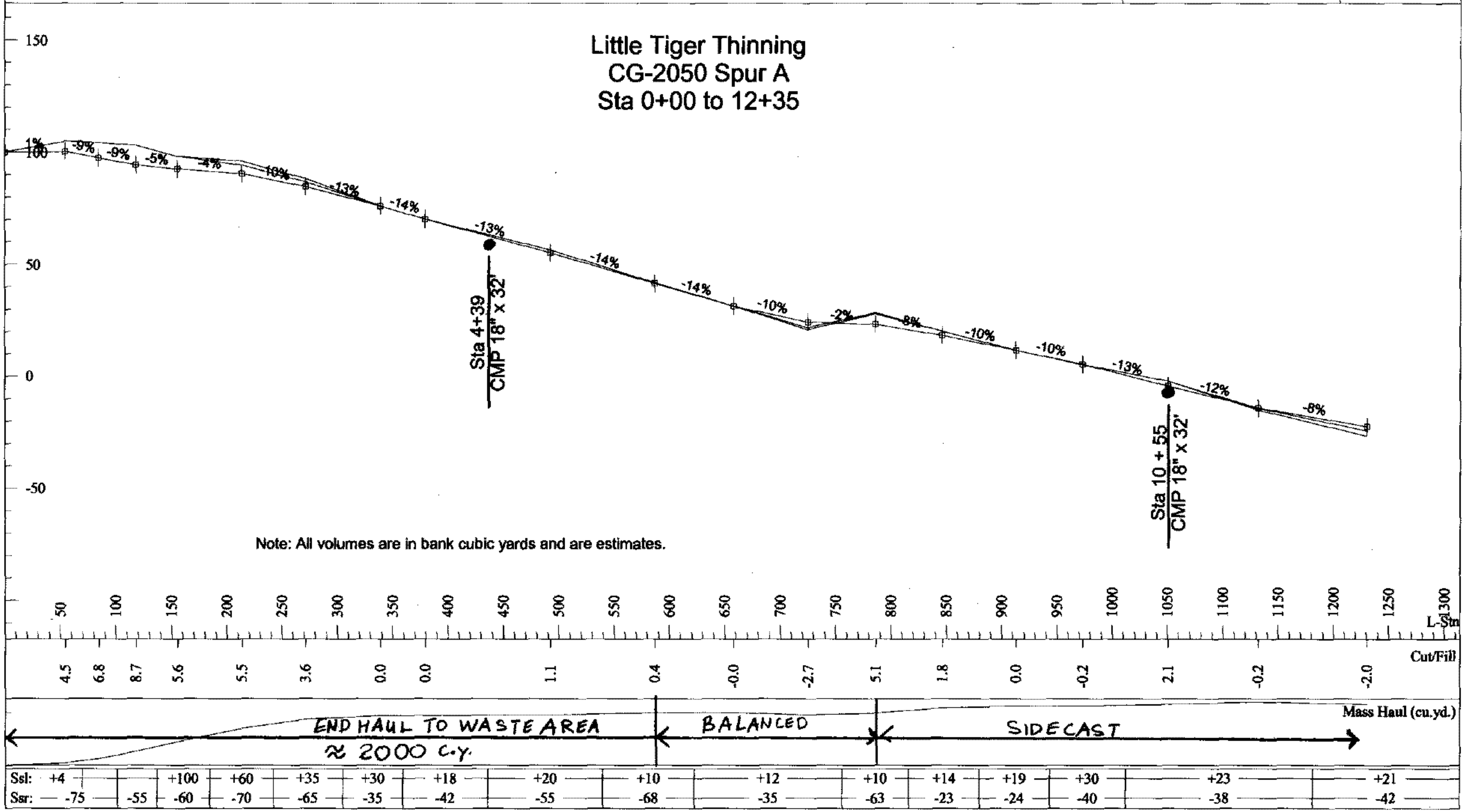
Yacolt District

ROADENG Plan	Scale 1:1440	P. 1
D:\Roadeng traverses\CG-2050_Spur_A		06/01/17

Little Tiger Thinning
CG-2050 Spur A
Sta 0+00 to 12+35



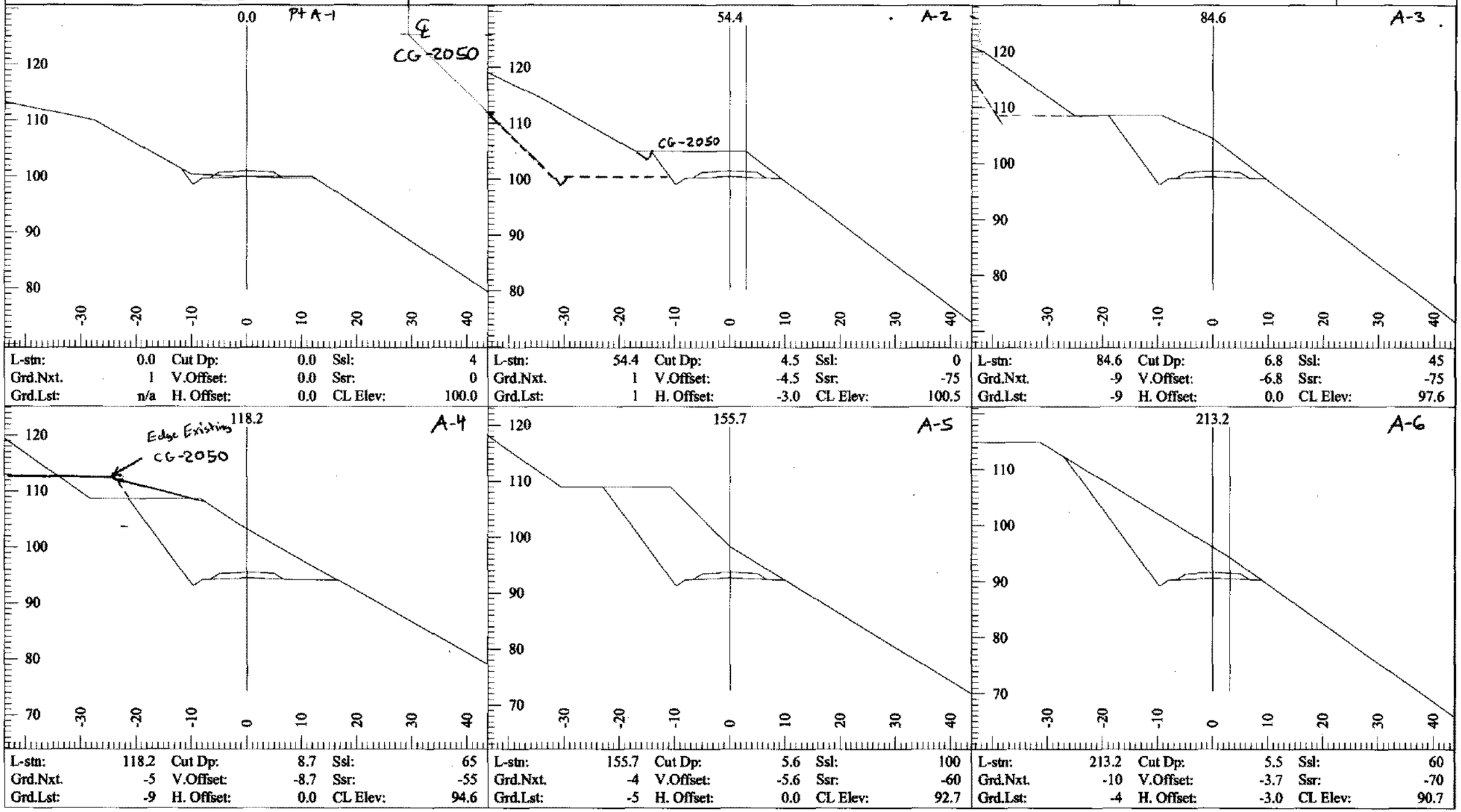
ROADENG Profile | Horz Scale 1:1200 | P. 1
D:\Roadeng traverses\CG-2050_Spur_A | Vert Scale 1:600 | 06/01/17



L-Stn ft.	P-Stn ft.	Cut Dp. ft.	Grade %	V.Brk %	Mass H. cu.yd.
0.0	0.0	0.0		0	0.0
54.4	54.4	4.5	1	-10	98.4
84.6	84.6	6.8	-9	0	248.6
118.2	118.2	8.7	-9	4	534.3
155.7	155.7	5.6	-5	1	900.4
213.2	212.9	5.5	-4	-6	1400.0
271.2	270.6	3.6	-10	-3	1751.1
338.9	338.1	0.0	-13	-2	1891.9
379.5	378.7	0.0	-14	1	1885.3
492.4	491.5	1.1	-13	-1	1918.2
587.1	591.2	0.4	-14	0	1999.0
657.9	661.5	-0.0	-11	4	2006.8
725.2	728.1	-2.7	-10	9	1918.1
786.4	791.9	5.1	-2	-6	1998.1
846.3	851.4	1.8	-8	-2	2194.4
913.0	918.1	0.0	-10	0	2257.7
973.4	978.5	-0.2	-10	-2	2258.0
1050.3	1055.4	2.1	-13	1	2326.1
1132.0	1137.2	-0.2	-12	3	2402.3
1230.7	1235.4	-2.0	-8	0	2318.0

NOTE: ALL VOLUMES ARE IN BANK CUBIC YARD AND ARE ESTIMATES

ROADENG Section	Scale 1:240	P. 1
D:\Roadeng traverses\CG-2050_Spur_A		06/01/17

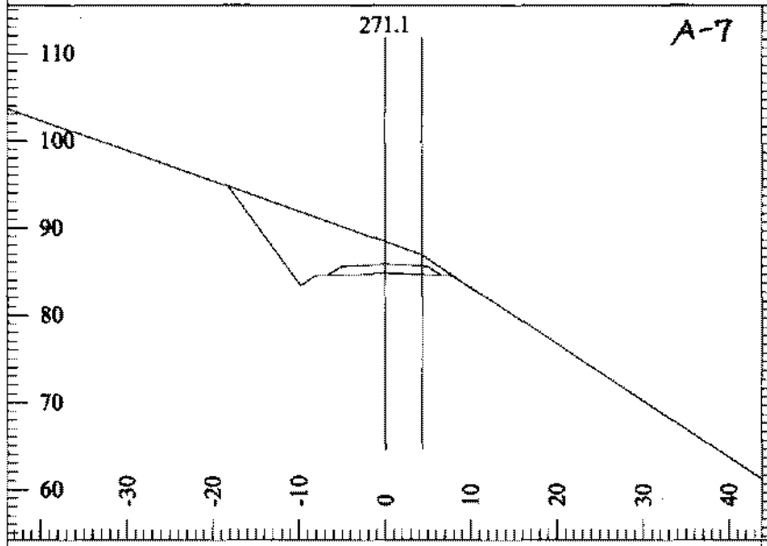


L-stn:	0.0	Cut Dp:	0.0	Ssl:	4	L-stn:	54.4	Cut Dp:	4.5	Ssl:	0
Grd.Nxt.	1	V.Offset:	0.0	Ssr:	0	Grd.Nxt.	1	V.Offset:	-4.5	Ssr:	-75
Grd.Lst:	n/a	H. Offset:	0.0	CL Elev:	100.0	Grd.Lst:	1	H. Offset:	-3.0	CL Elev:	100.5

L-stn:	84.6	Cut Dp:	6.8	Ssl:	45	L-stn:	118.2	Cut Dp:	8.7	Ssl:	65
Grd.Nxt.	-9	V.Offset:	-6.8	Ssr:	-75	Grd.Nxt.	-5	V.Offset:	-8.7	Ssr:	-55
Grd.Lst:	-9	H. Offset:	0.0	CL Elev:	97.6	Grd.Lst:	-9	H. Offset:	0.0	CL Elev:	94.6

L-stn:	155.7	Cut Dp:	5.6	Ssl:	100	L-stn:	213.2	Cut Dp:	5.5	Ssl:	60
Grd.Nxt.	-4	V.Offset:	-5.6	Ssr:	-60	Grd.Nxt.	-10	V.Offset:	-3.7	Ssr:	-70
Grd.Lst:	-5	H. Offset:	0.0	CL Elev:	92.7	Grd.Lst:	-4	H. Offset:	-3.0	CL Elev:	90.7

ROADENG Section	Scale 1:240	P. 2
D:\Roadeng traverses\CG-2050_Spur_A		06/01/17



L-stn:	271.1	Cut Dp:	3.5	Ssl:	35
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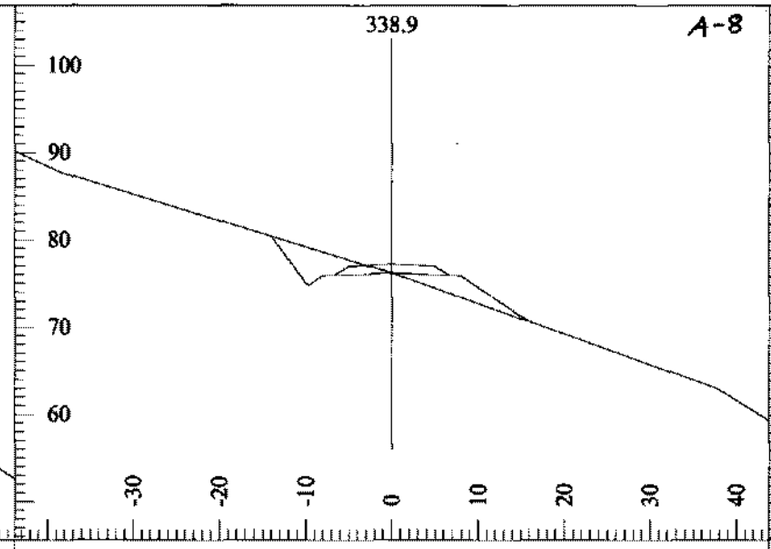
Grd.Lst:	-10	H. Offset:	-4.3	CL Elev:	84.8



L-stn:	338.9	Cut Dp:	0.0	Ssl:	30
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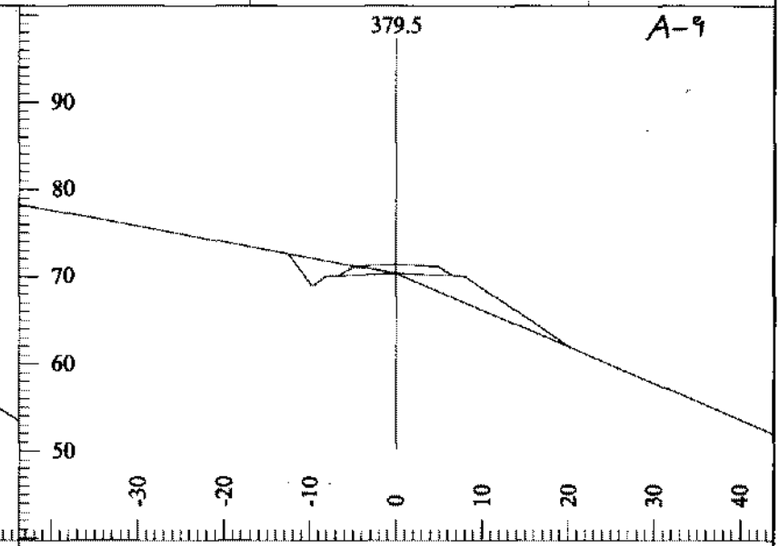
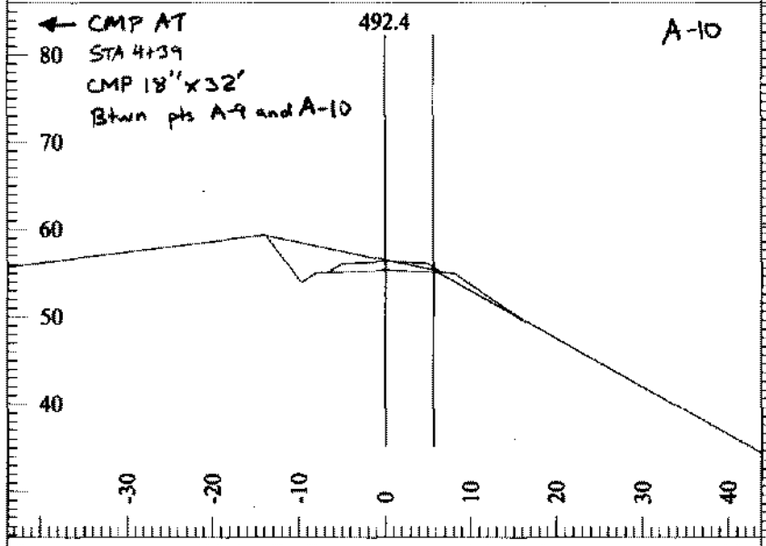
Grd.Lst:	-13	H. Offset:	0.0	CL Elev:	76.2



L-stn:	379.5	Cut Dp:	0.0	Ssl:	18
Grd.Nxt.	-13	V.Offset:	0.0	Ssr:	-42
Grd.Lst:	-14	H. Offset:	0.0	CL Elev:	70.4



L-stn:	492.4	Cut Dp:	1.1	Ssl:	20
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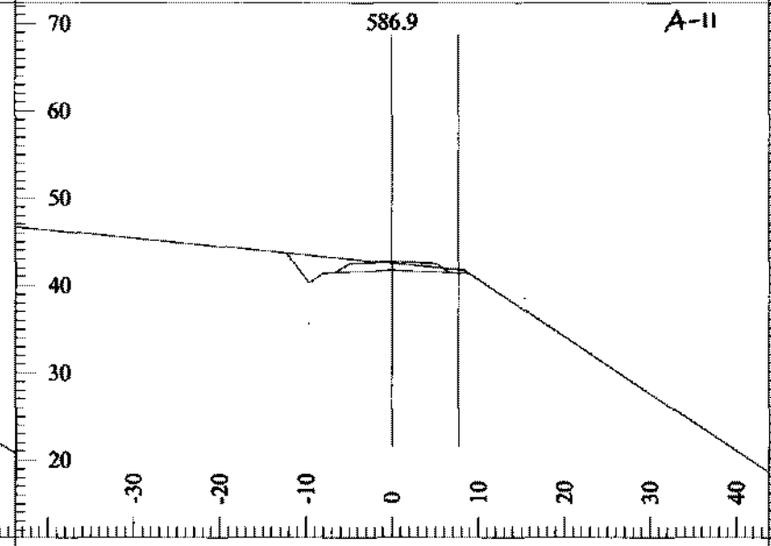
Grd.Lst:	-13	H. Offset:	-5.6	CL Elev:	55.4



L-stn:	586.9	Cut Dp:	0.8	Ssl:	10
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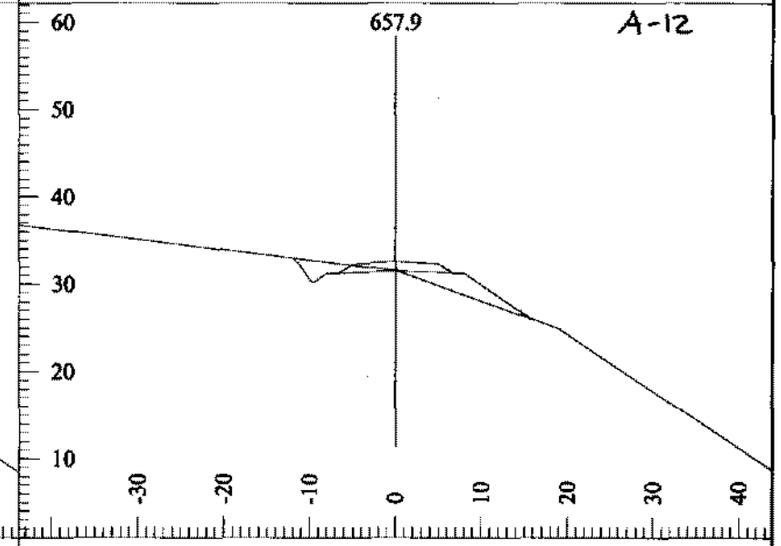
Grd.Lst:	-14	H. Offset:	-8.0	CL Elev:	41.7



L-stn:	657.9	Cut Dp:	-0.0	Ssl:	12
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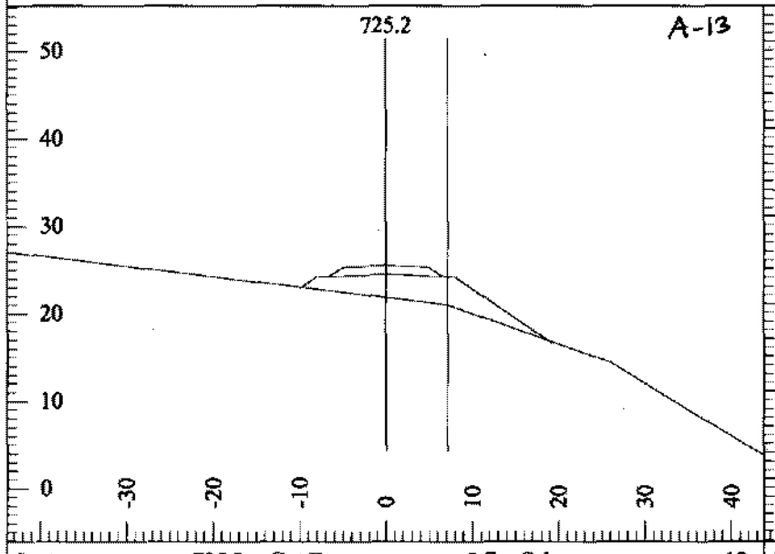
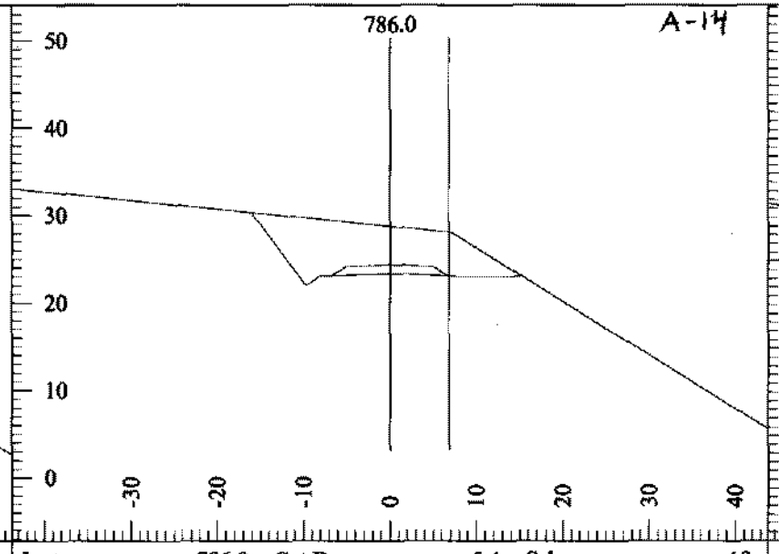
Grd.Lst:	-14	H. Offset:	0.0	CL Elev:	31.6

ROADENG Section	Scale 1:240	P. 3
D:\Roadeng traverses\CG-2050_Spur_A		06/01/17



L-stn:	725.2	Cut Dp:	-2.7	Ssl:	12
Grd.Nxt.	-2	V.Offset:	3.6	Ssr:	-35
Grd.Lst:	-2	H. Offset:	-7.2	CL Elev:	24.5



L-stn:	786.0	Cut Dp:	5.4	Ssl:	10
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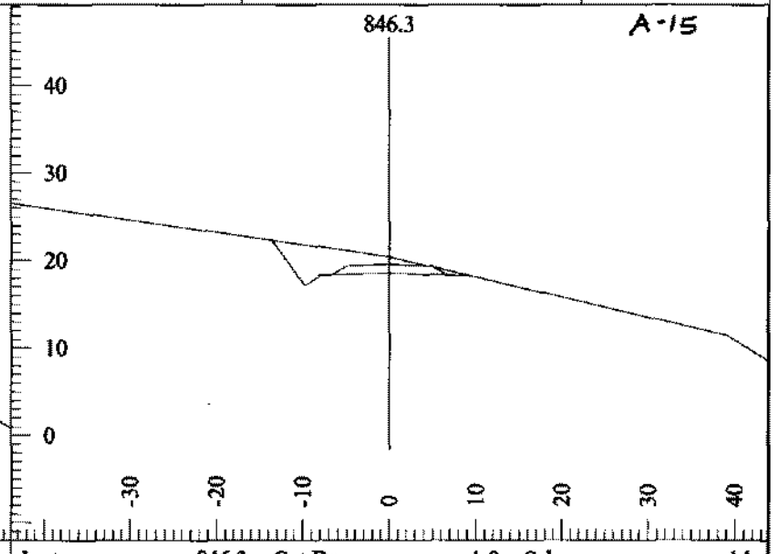
Grd.Lst:	-2	H. Offset:	-7.0	CL Elev:	23.4



L-stn:	846.3	Cut Dp:	1.8	Ssl:	14
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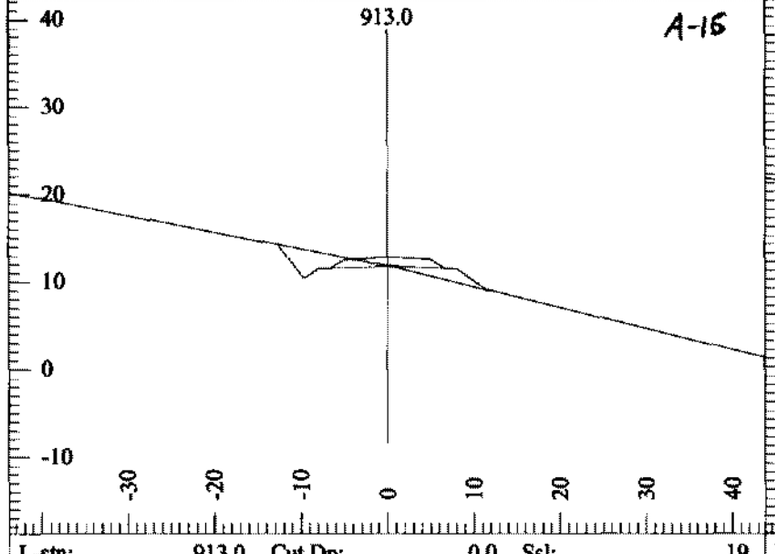

L-stn:	913.0	Cut Dp:	0.0	Ssl:	19
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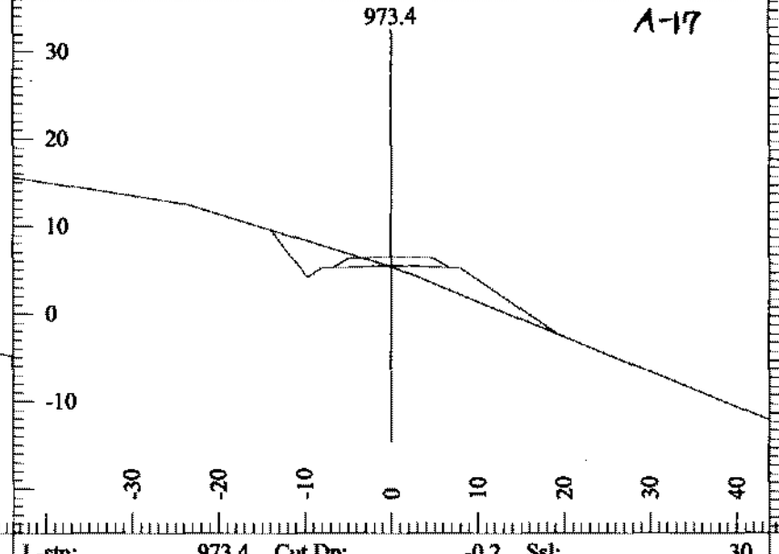
Grd.Lst:	-10	H. Offset:	0.0	CL Elev:	11.9



L-stn:	973.4	Cut Dp:	-0.2	Ssl:	30
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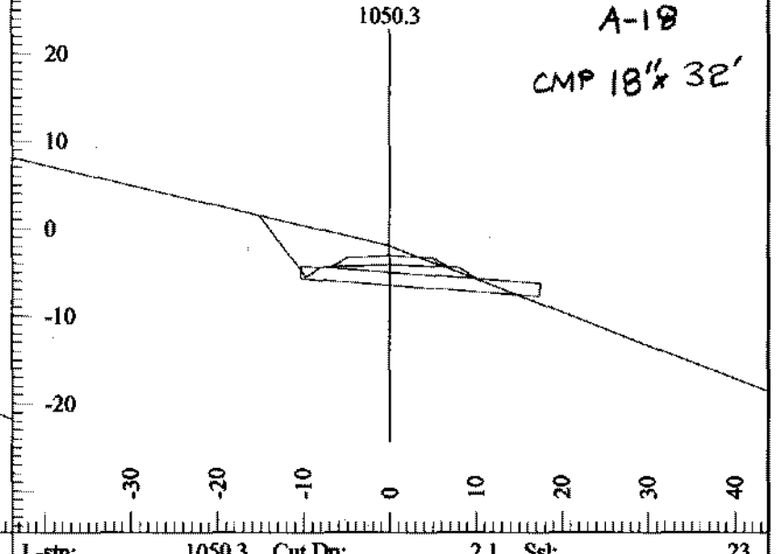
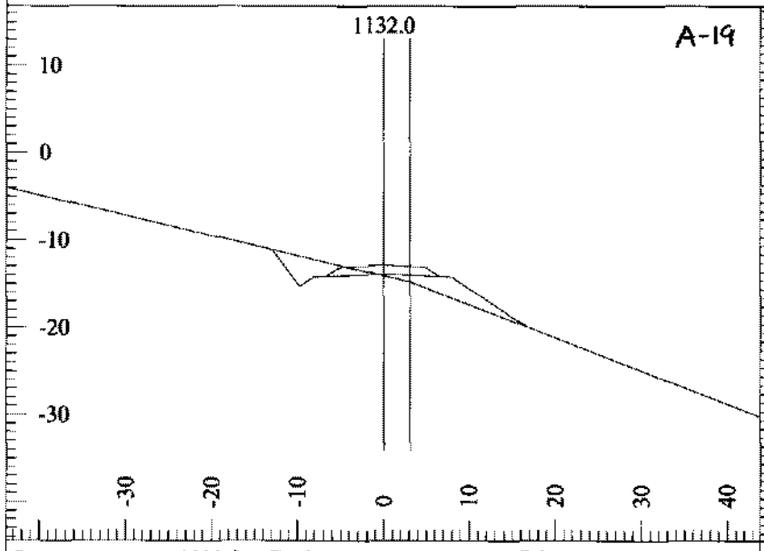


L-stn:	1050.3	Cut Dp:	2.1	Ssl:	23
Grd.Nxt.	-12	V.Offset:	-2.1	Ssr:	-38
Grd.Lst:	-13	H. Offset:	0.0	CL Elev:	-4.1

ROADENG Section	Scale 1:240	P. 4
D:\Roadeng traverses\CG-2050_Spur_A		06/01/17



L-stn:	1132.0	Cut Dp:	-0.2	Ssl:	23
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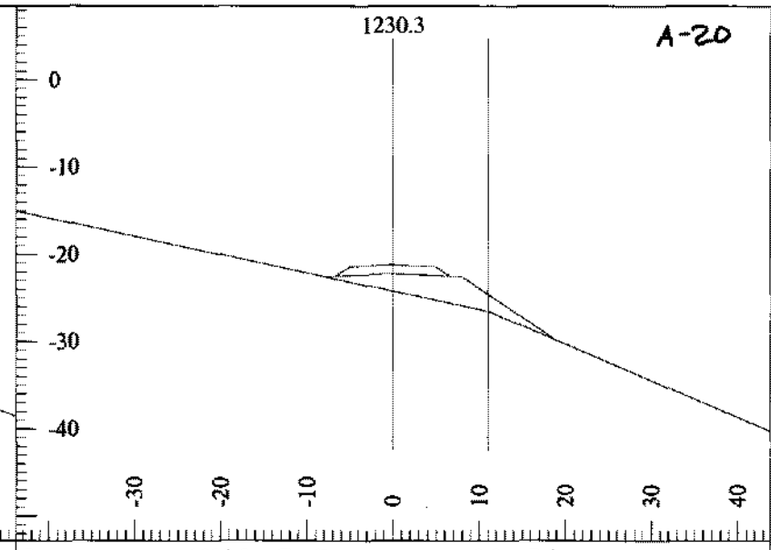
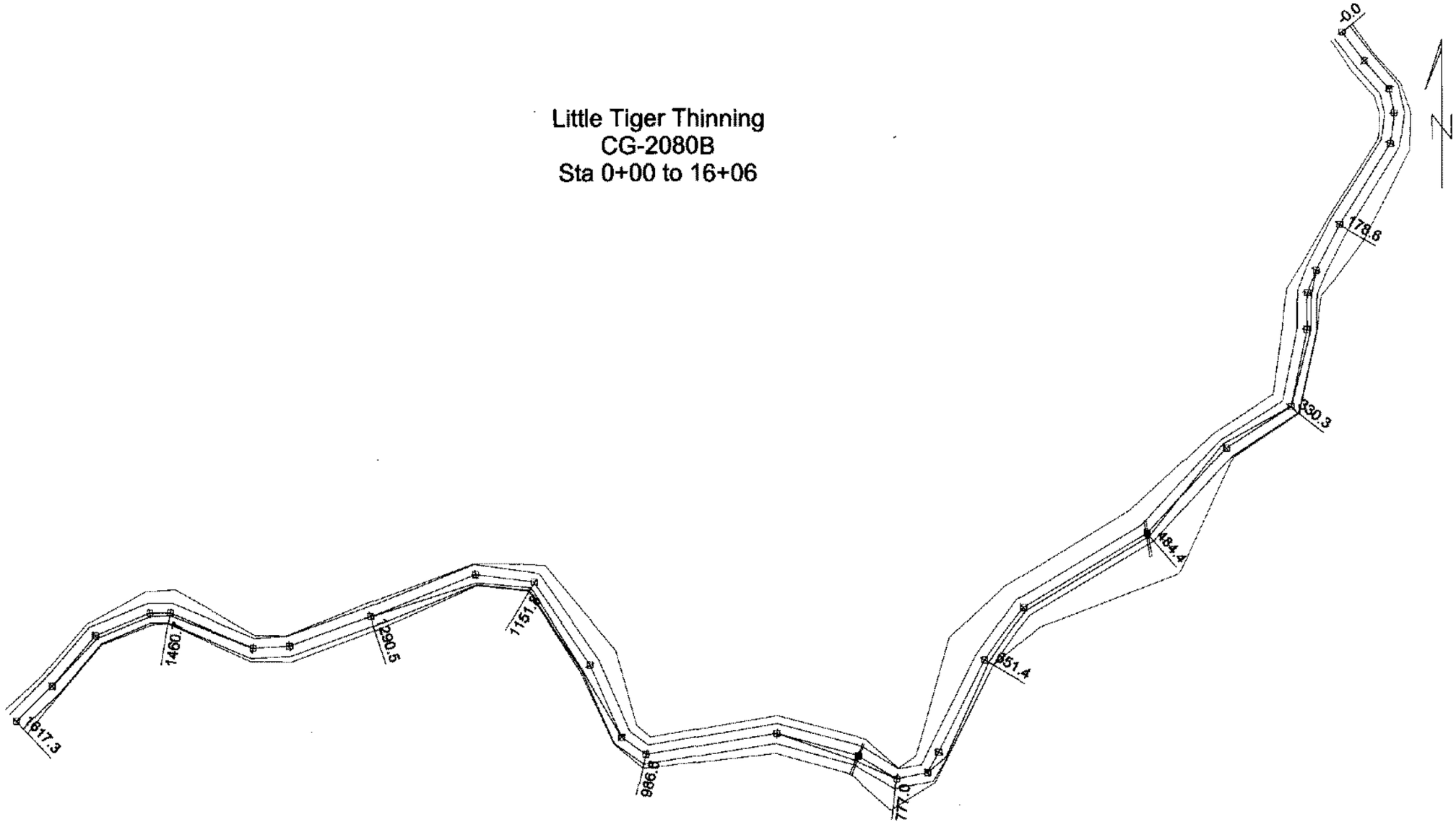
Grd.Lst:	-12	H. Offset:	-3.1	CL Elev:	-13.9



L-stn:	1230.3	Cut Dp:	-2.0	Ssl:	21
Grd.Nxt.	-8	V.Offset:	4.3	Ssr:	-42
Grd.Lst:	-8	H. Offset:	-11.0	CL Elev:	-22.2

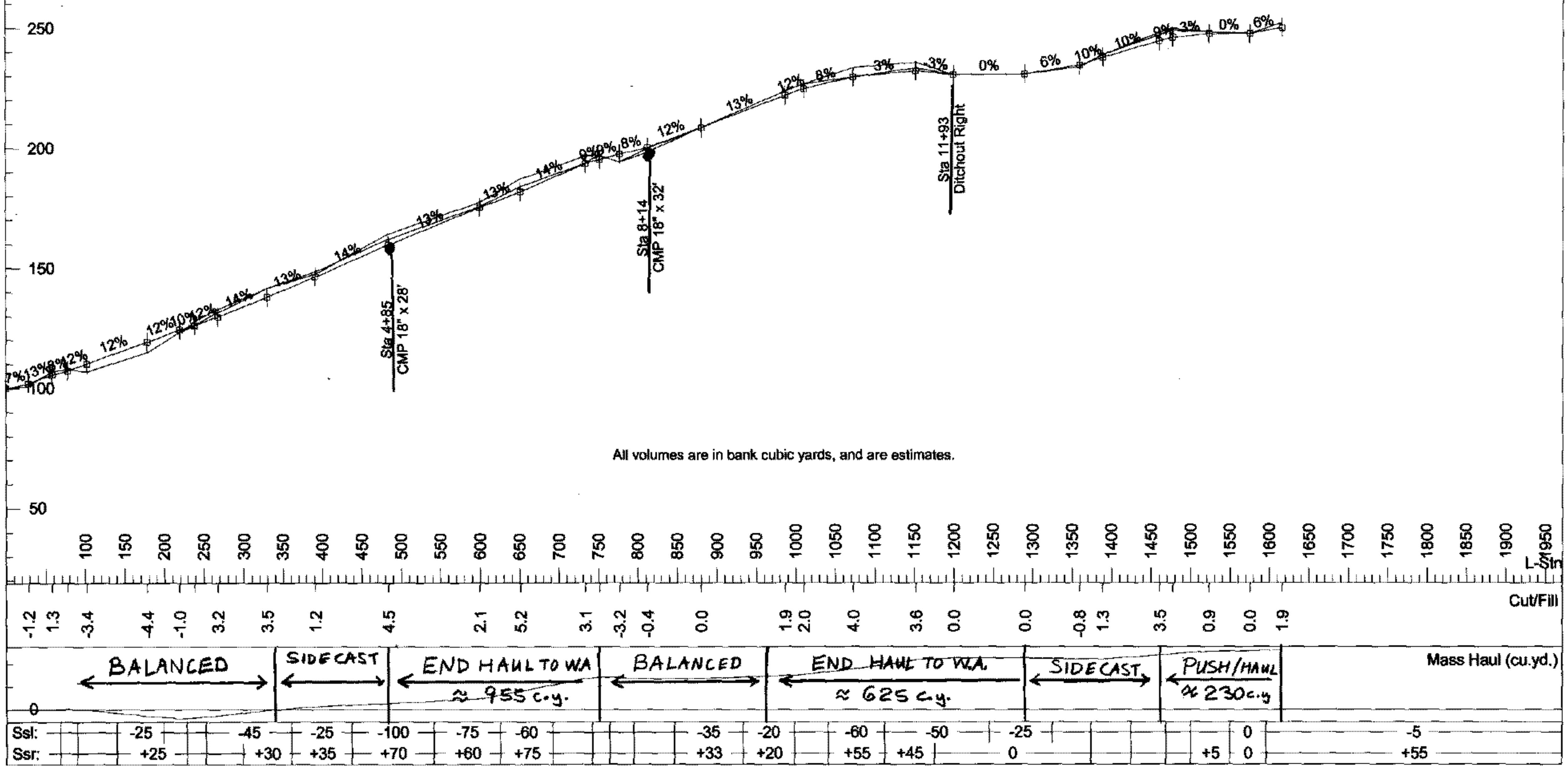
ROADENG Plan	Scale 1:1200	P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080B		06/01/20

Little Tiger Thinning
CG-2080B
Sta 0+00 to 16+06



ROADENG Profile	Horz Scale 1:1800	P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080B	Vert Scale 1:600	06/01/20

Little Tiger Thinning
CG-2080B
Sta 0+00 to 16+06



ROADENG Data						P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080B						06/01/20
L-Stn ft.	P-Stn ft.	Cut Dp. ft.	Grade %	V.Brk %	Mass H. cu.yd.	
0.0	0.0	0.0	7	0	0.0	
28.8	28.8	-1.2	13	6	5.8	
58.6	58.6	1.3	8	-5	18.8	
78.1	78.1	0.5	12	4	28.1	
102.4	102.4	-3.4	12	0	-1.6	
178.6	178.6	-4.4	12	1	-266.5	
219.6	219.6	-1.0	10	-3	-370.9	
238.5	237.8	1.5	12	2	-358.0	
267.9	267.7	3.2	14	2	-264.8	
330.3	330.0	3.5	13	0	-24.3	
391.6	391.9	1.2	14	1	137.0	
484.3	485.8	4.5	13	-1	254.4	12
599.7	601.0	2.1	13	-1	464.4	
651.6	651.7	5.2	14	2	800.5	
733.4	736.1	3.1	9	-5	1364.7	
751.9	753.6	1.7	9	-1	1419.1	16
777.0	778.7	-3.2	8	-1	1401.1	
812.7	814.0	-0.4	12	4	1338.0	
880.3	881.2	0.0	13	0	1353.8	
986.7	987.6	1.9	12	-1	1477.7	
1010.3	1011.2	2.0	8	-4	1526.4	21
1073.0	1073.4	4.0	3	-4	1776.7	22
1152.1	1149.8	3.6	-3	-6	2159.2	23
1199.8	1193.6	0.0	0	3	2252.6	24
1290.5	1283.1	0.0	6	5	2243.1	25
1359.2	1351.8	-0.8	10	5	2205.7	
1388.8	1381.4	1.3	10	-1	2201.6	
1460.8	1452.9	3.5	9	-1	2369.6	28
1477.4	1468.4	3.9	3	-5	2436.2	
1524.2	1514.2	1.1	0	-3	2545.2	
1576.8	1566.2	0.0	6	6	2564.9	
1617.4	1606.8	1.9		0	2599.2	

BALANCED

1419 − 464 = ≈ 955 c.y.

END HAUL TO WASTE AREA

BALANCED

2243 − 1419 = 624

END HAUL TO W.A.

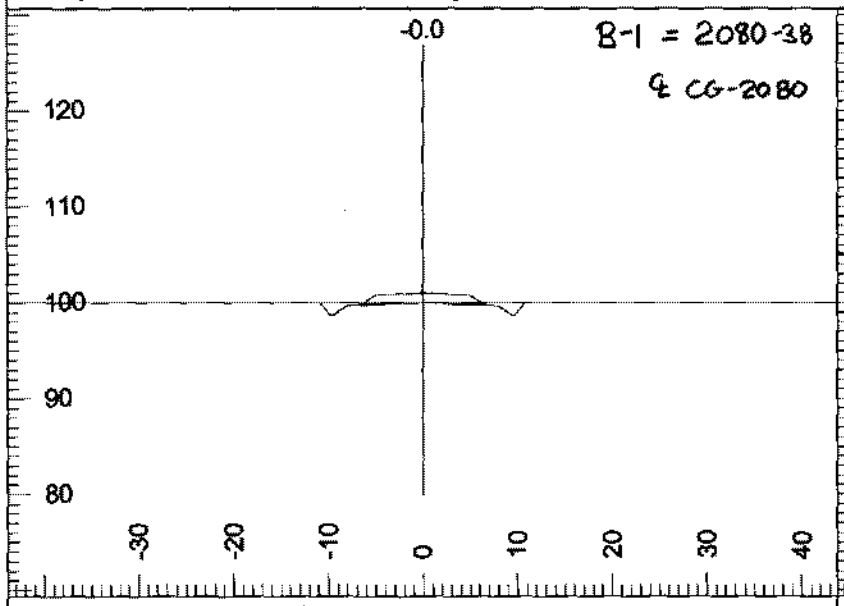
≈ 625 c.y.

2599 − 2369 = 230 cy

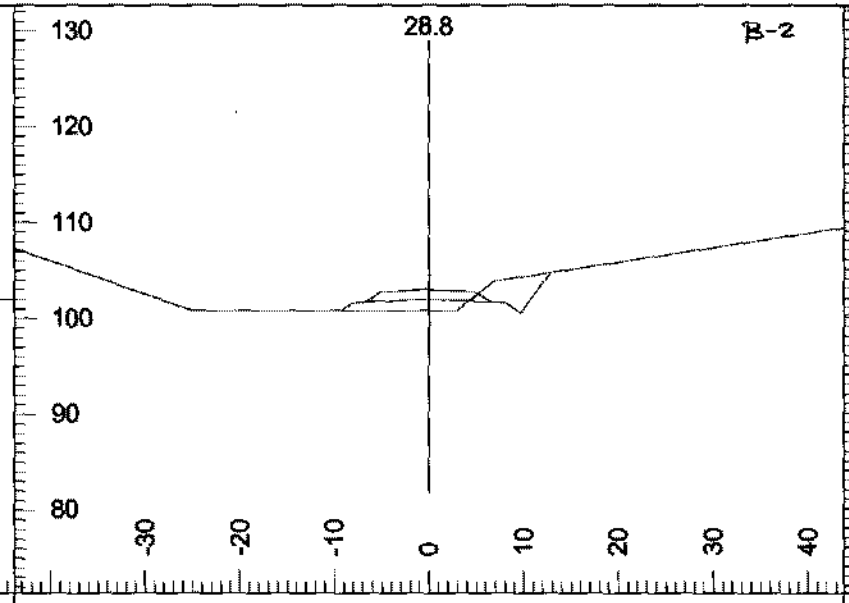
END HAUL/PUSH

≈ 230 cy.

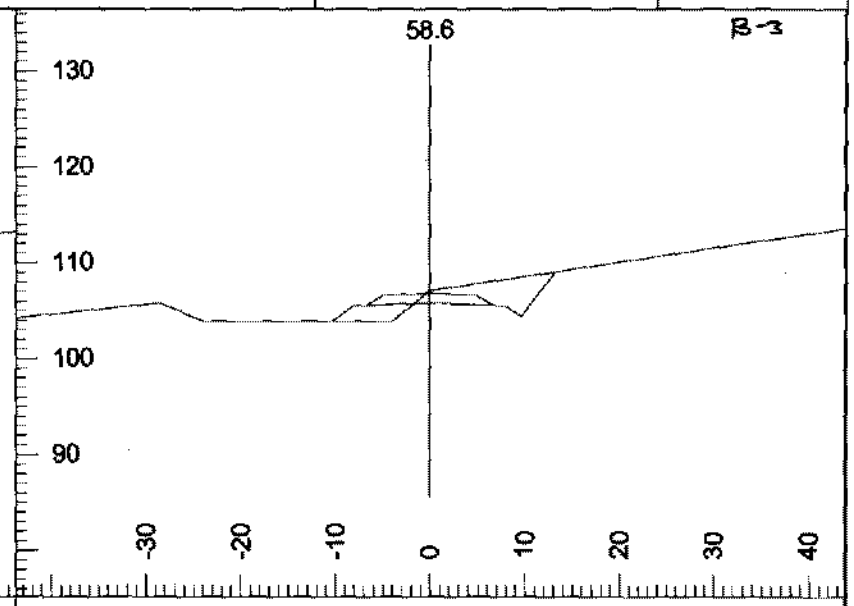
ROADENG Section									Scale 1:240				P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080B													06/01/20



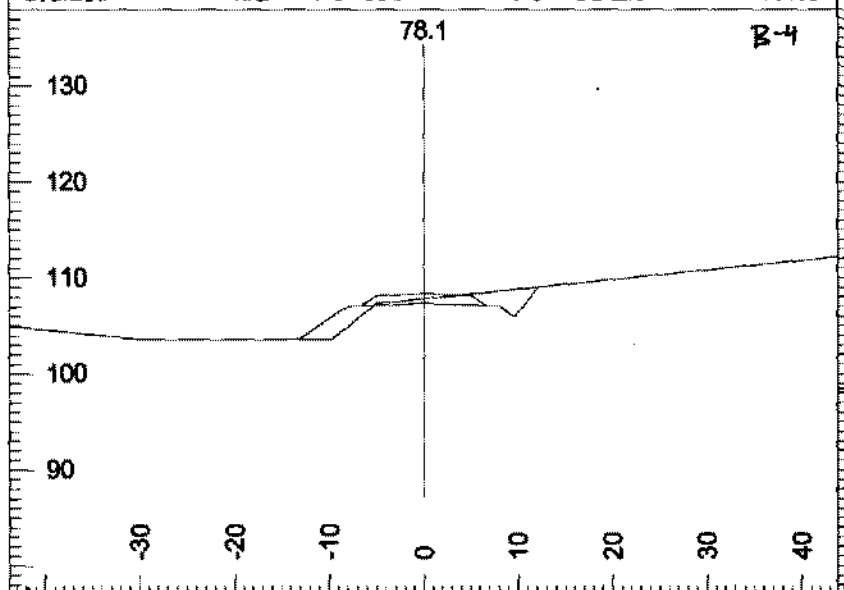
L-stn:	-0.0	Cut Dp:	0.0	Ssl:	0
Grd.Nxt.	7	V.Offset:	0.0	Ssr:	0
Grd.Lst:	n/a	H. Offset:	0.0	CL Elev:	100.0



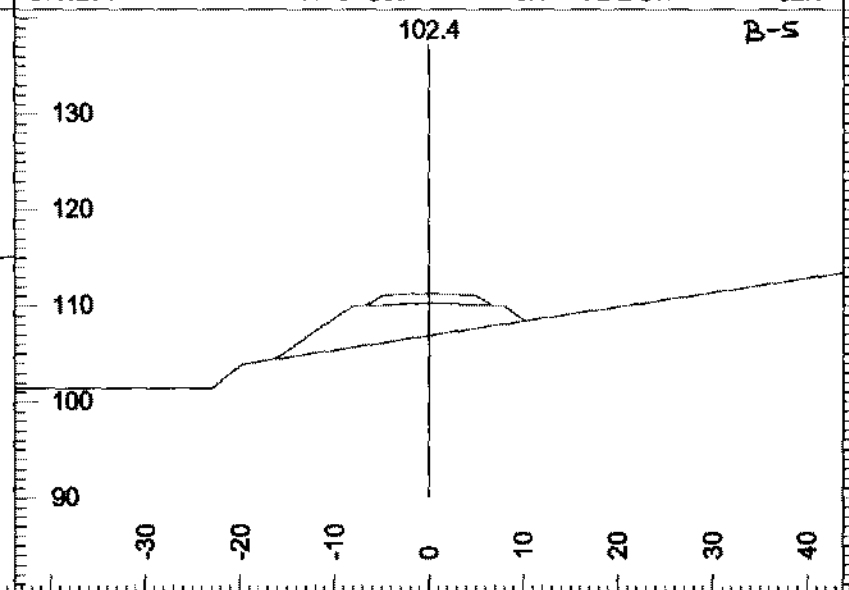
L-stn:	28.8	Cut Dp:	-1.2	Ssl:	0
Grd.Nxt.	13	V.Offset:	1.2	Ssr:	0
Grd.Lst:	7	H. Offset:	0.0	CL Elev:	102.0



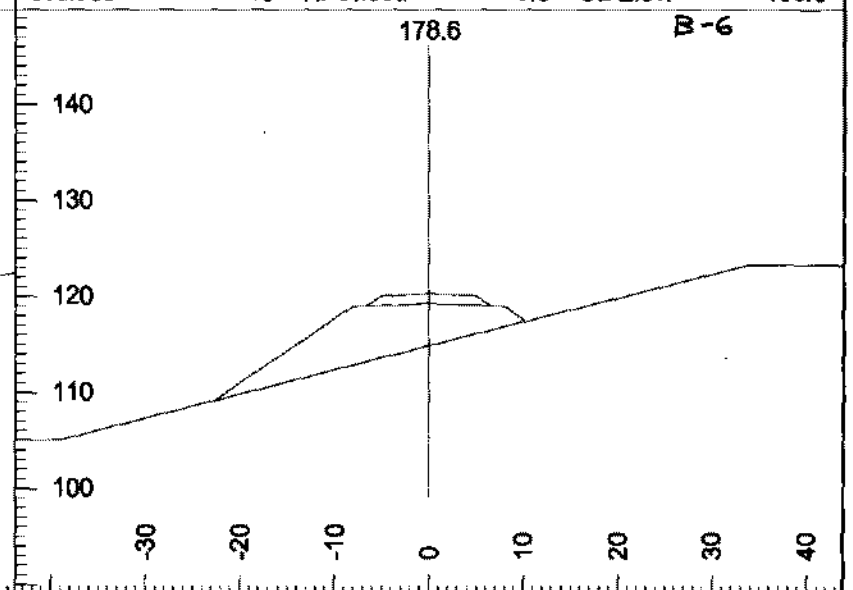
L-stn:	58.6	Cut Dp:	1.3	Ssl:	-80
Grd.Nxt.	8	V.Offset:	-1.3	Ssr:	15
Grd.Lst:	13	H. Offset:	0.0	CL Elev:	105.8



L-stn:	78.1	Cut Dp:	0.5	Ssl:	-10
Grd.Nxt.	12	V.Offset:	-0.5	Ssr:	10
Grd.Lst:	8	H. Offset:	0.0	CL Elev:	107.4

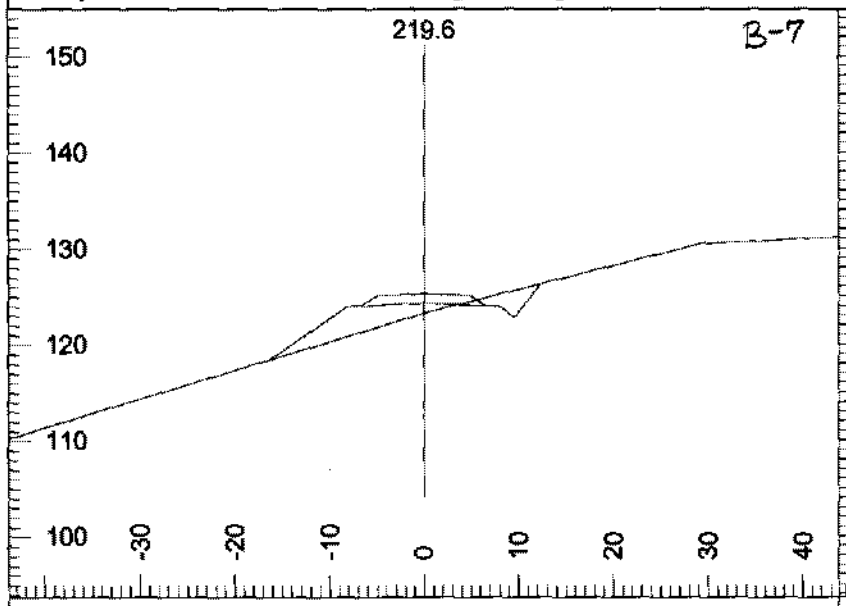


L-stn:	102.4	Cut Dp:	-3.4	Ssl:	-15
Grd.Nxt.	12	V.Offset:	3.4	Ssr:	15
Grd.Lst:	12	H. Offset:	0.0	CL Elev:	110.3

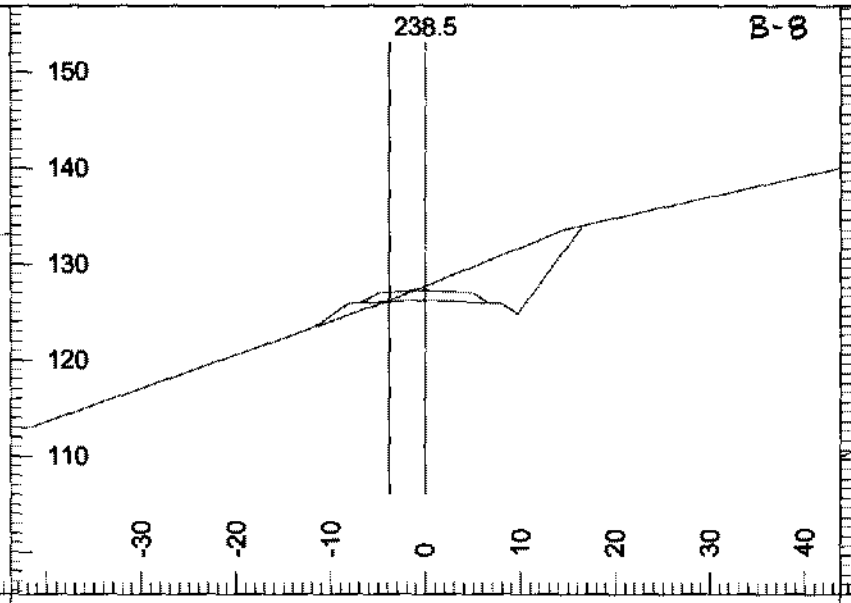


L-stn:	178.6	Cut Dp:	-4.4	Ssl:	-25
Grd.Nxt.	12	V.Offset:	4.4	Ssr:	25
Grd.Lst:	12	H. Offset:	0.0	CL Elev:	119.3

ROADENG Section			Scale 1:240	P. 2
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080B				06/01/20



L-stn:	219.6	Cut Dp:	-1.0	Ssl:	-30
Grd.Nxt.	10	V.Offset:	1.0	Ssr:	25
Grd.Lst:	12	H. Offset:	0.0	CL Elev:	124.4



L-stn:	238.5	Cut Dp:	1.5	Ssl:	-35
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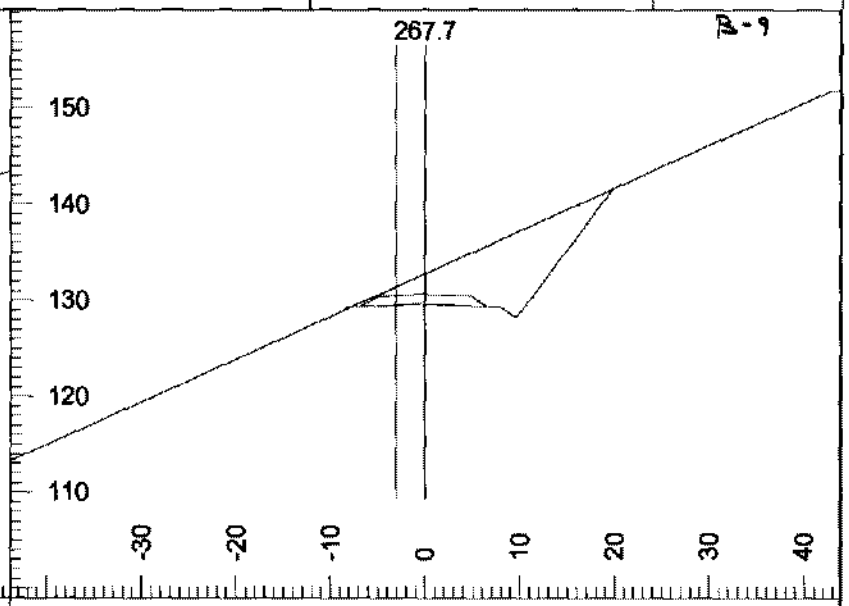
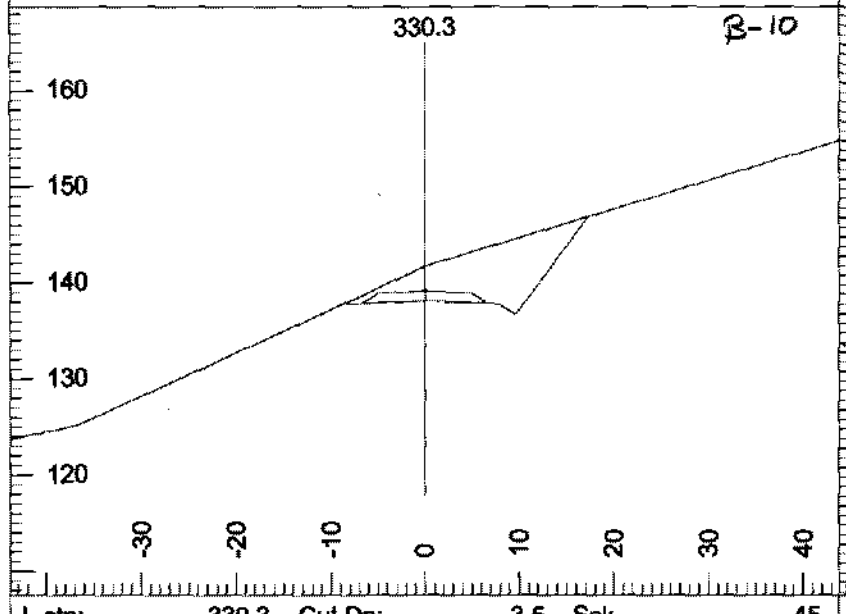
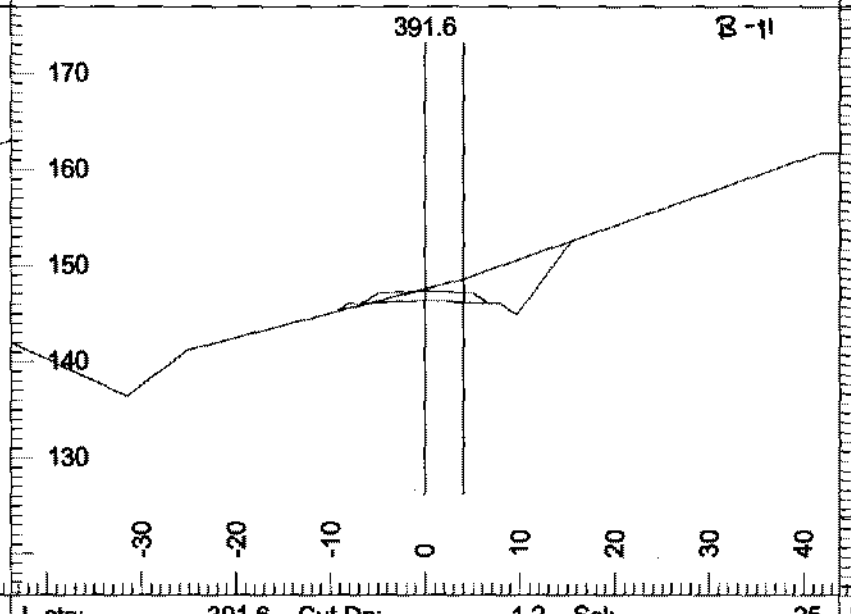
Grd.Lst:	12	H. Offset:	3.7	CL Elev:	126.2



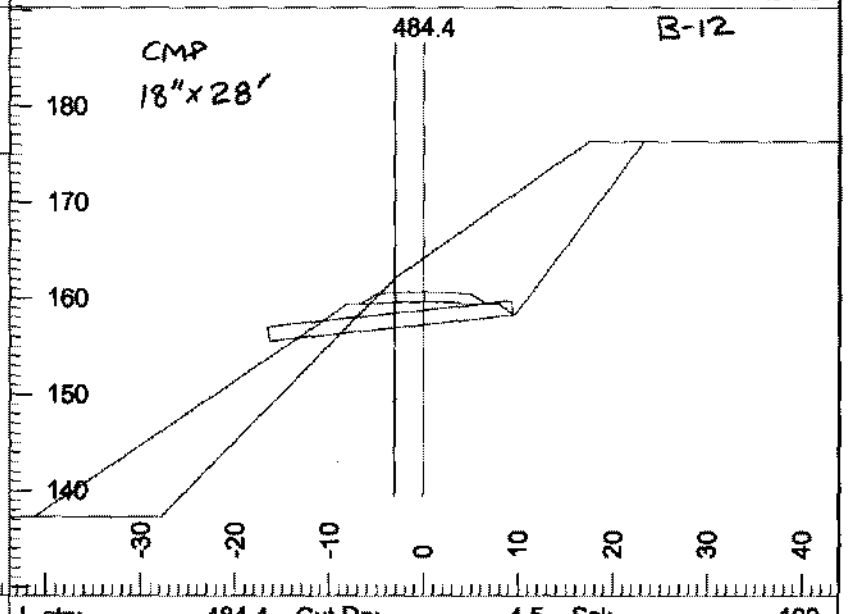
L-stn:	267.7	Cut Dp:	3.1	Ssl:	-45
Grd.Nxt.	12	V.Offset:	-1.7	Ssr:	45
Grd.Lst:	12	H. Offset:	3.1	CL Elev:	129.6



L-stn:	330.3	Cut Dp:	3.5	Ssl:	-45
Grd.Nxt.	13	V.Offset:	-3.5	Ssr:	30
Grd.Lst:	14	H. Offset:	0.0	CL Elev:	138.1



L-stn:	391.6	Cut Dp:	1.2	Ssl:	-25
Grd.Nxt.	14	V.Offset:	-2.2	Ssr:	35
Grd.Lst:	13	H. Offset:	-4.0	CL Elev:	146.3



L-stn:	484.4	Cut Dp:	4.5	Ssl:	-100
Grd.Nxt.	13	V.Offset:	-2.3	Ssr:	70
Grd.Lst:	13	H. Offset:	3.0	CL Elev:	159.7

ROADENG Section									Scale 1:240	P. 3
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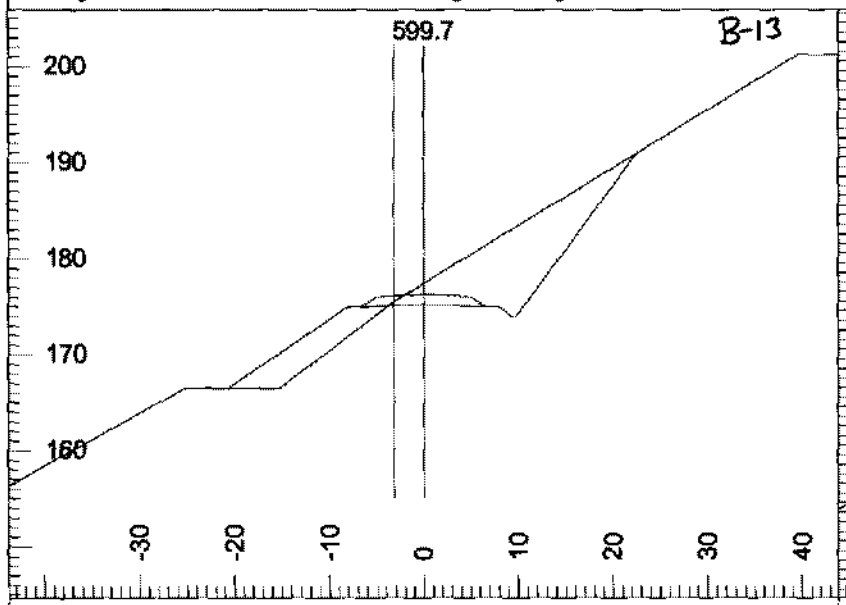
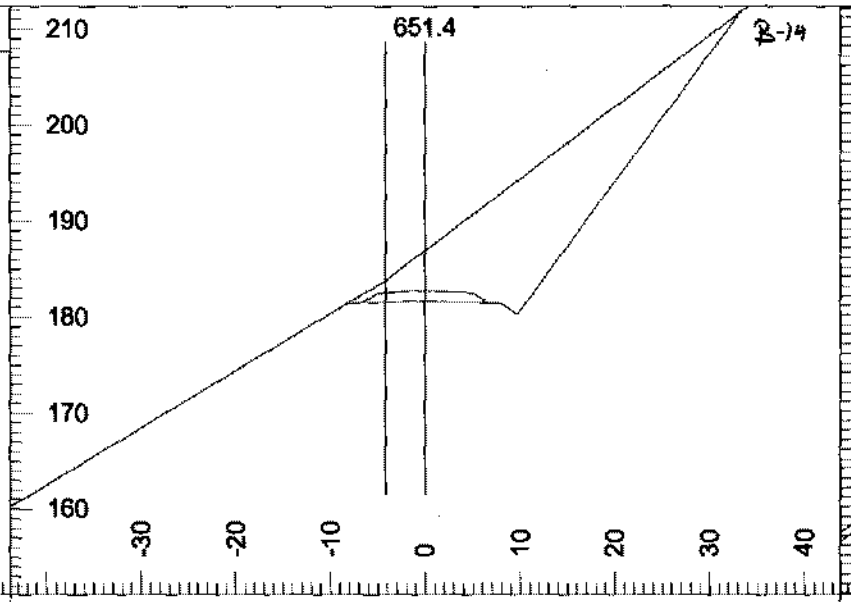
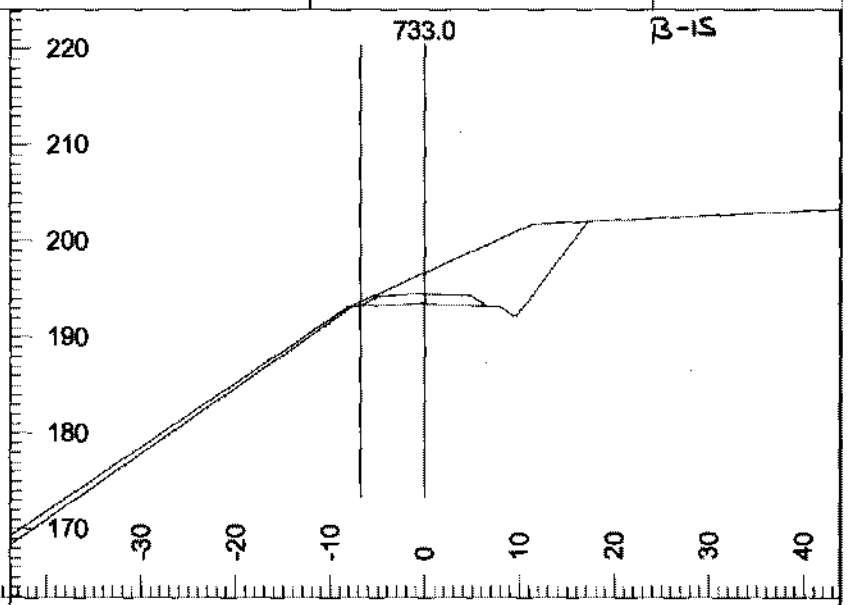


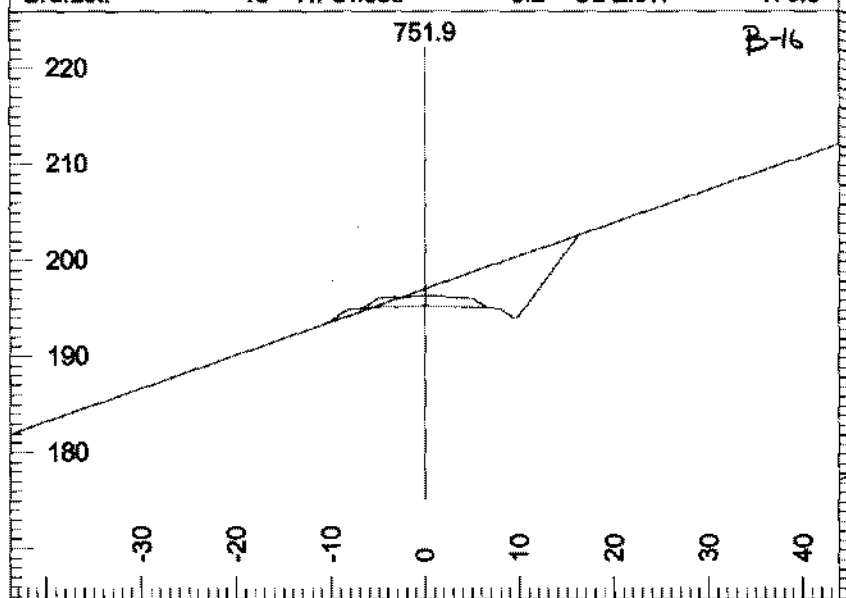
L-stn:	599.7	Cut Dp:	2.1	Ssl:	-75
Grd.Nxt.	13	V.Offset:	-0.2	Ssr:	60
Grd.Lst:	13	H. Offset:	3.2	CL Elev:	175.3



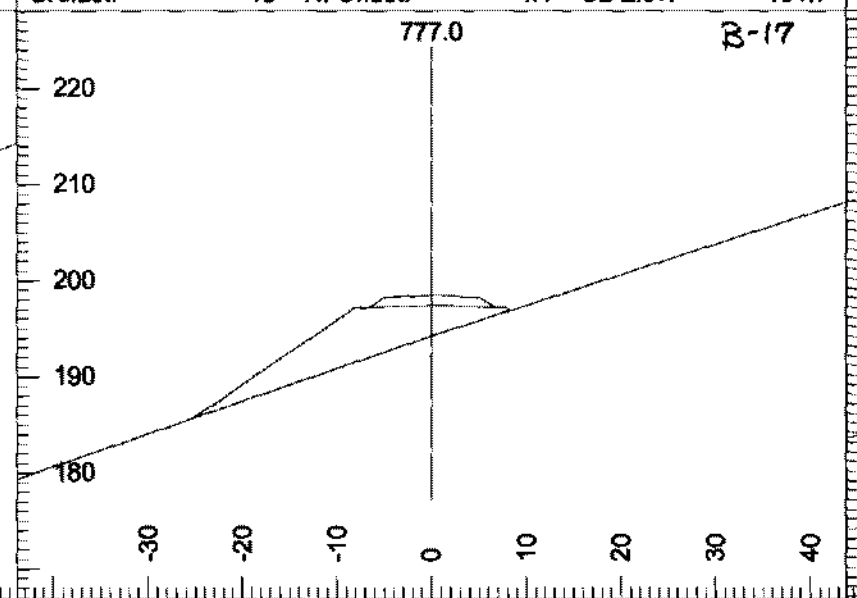
L-stn:	651.4	Cut Dp:	5.2	Ssl:	-60
Grd.Nxt.	13	V.Offset:	-2.1	Ssr:	75
Grd.Lst:	13	H. Offset:	4.1	CL Elev:	181.7



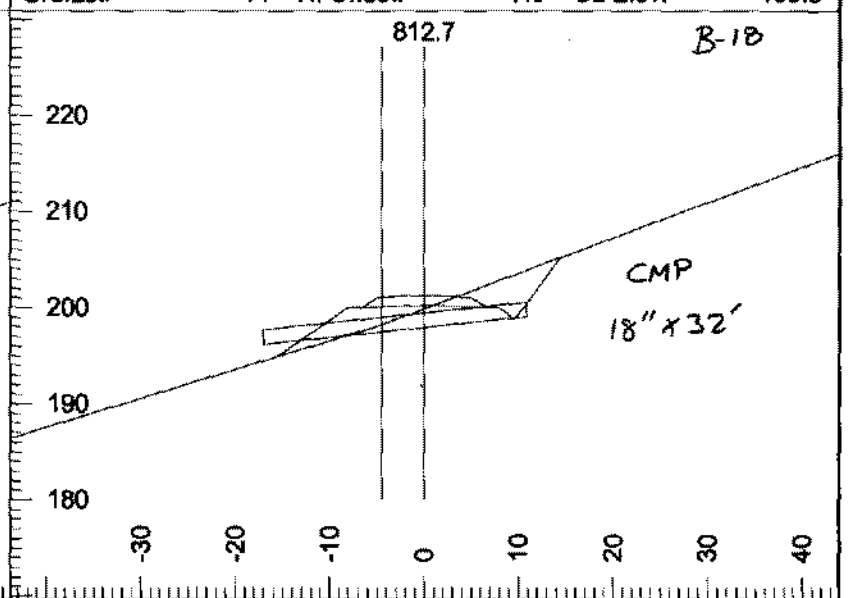
L-stn:	733.0	Cut Dp:	3.2	Ssl:	-70
Grd.Nxt.	14	V.Offset:	-0.0	Ssr:	45
Grd.Lst:	14	H. Offset:	7.0	CL Elev:	193.5



L-stn:	751.9	Cut Dp:	1.7	Ssl:	-35
Grd.Nxt.	9	V.Offset:	-1.7	Ssr:	35
Grd.Lst:	9	H. Offset:	0.0	CL Elev:	195.3



L-stn:	777.0	Cut Dp:	-3.2	Ssl:	-34
Grd.Nxt.	8	V.Offset:	3.2	Ssr:	32
Grd.Lst:	9	H. Offset:	0.0	CL Elev:	197.4



L-stn:	812.7	Cut Dp:	-0.4	Ssl:	-30
Grd.Nxt.	12	V.Offset:	2.1	Ssr:	37
Grd.Lst:	12	H. Offset:	4.4	CL Elev:	200.2

ROADENG Section | Scale 1:240 | P. 4

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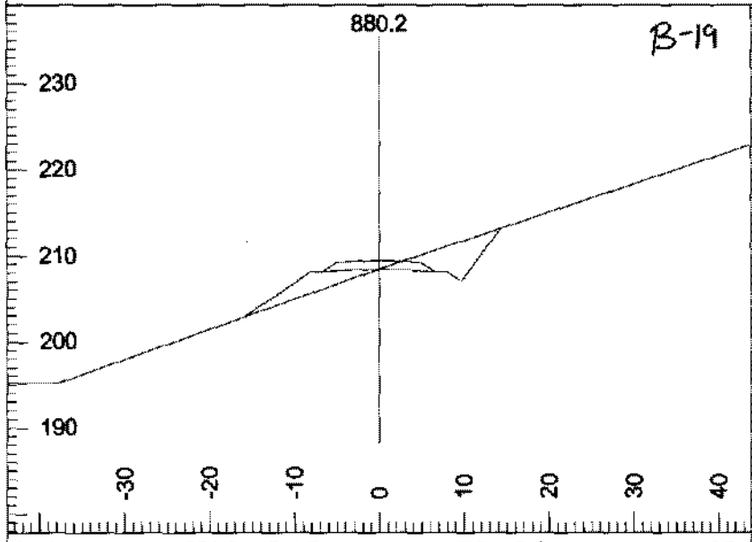
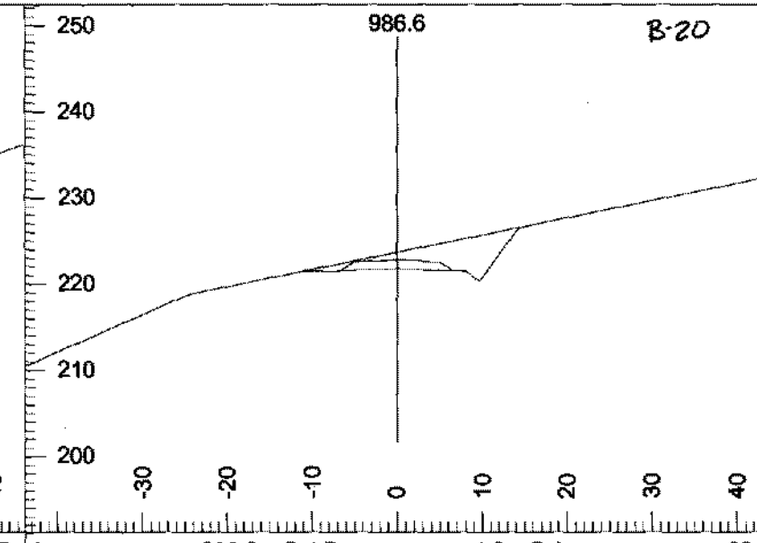
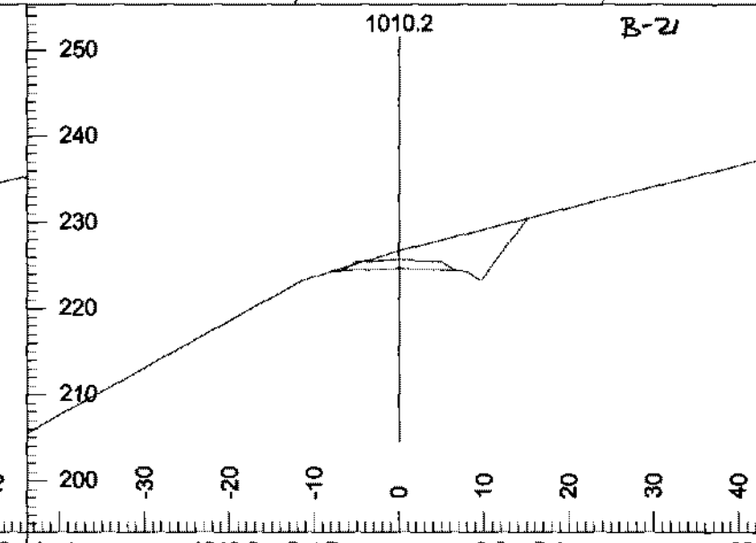


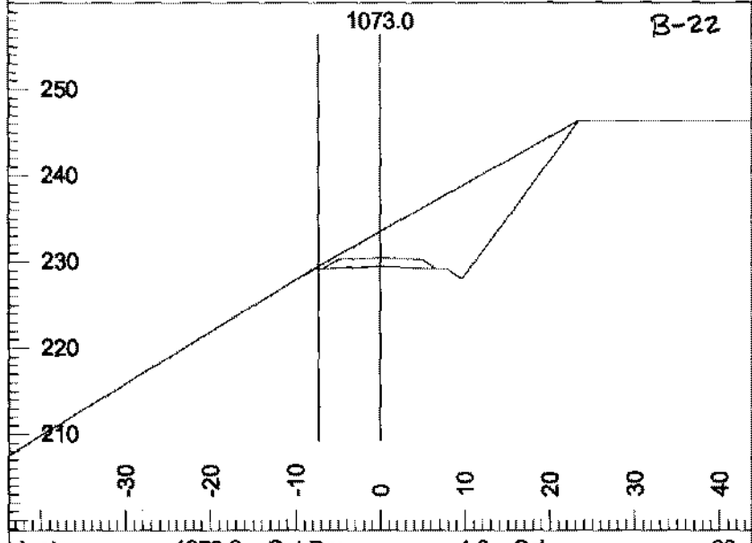
L-stn:	880.2	Cut Dp:	0.0	Ssl:	-35
Grd.Nxt.	13	V.Offset:	0.0	Ssr:	33
Grd.Lst:	12	H. Offset:	0.0	CL Elev:	208.5



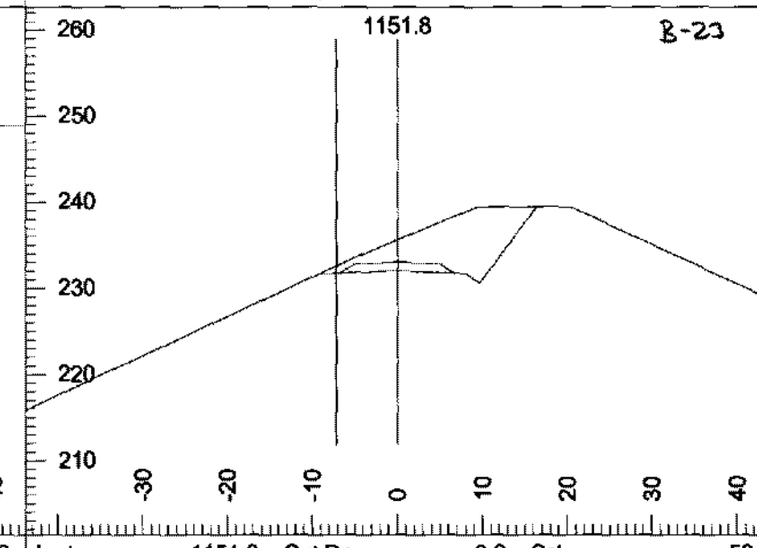
L-stn:	986.6	Cut Dp:	1.9	Ssl:	-20
Grd.Nxt.	12	V.Offset:	-1.9	Ssr:	20
Grd.Lst:	13	H. Offset:	0.0	CL Elev:	221.8



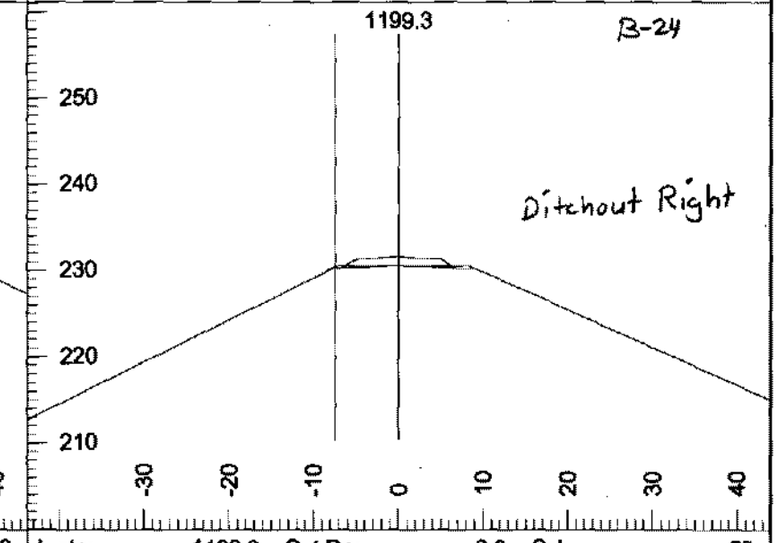
L-stn:	1010.2	Cut Dp:	2.0	Ssl:	-30
Grd.Nxt.	8	V.Offset:	-2.0	Ssr:	25
Grd.Lst:	12	H. Offset:	0.0	CL Elev:	224.6



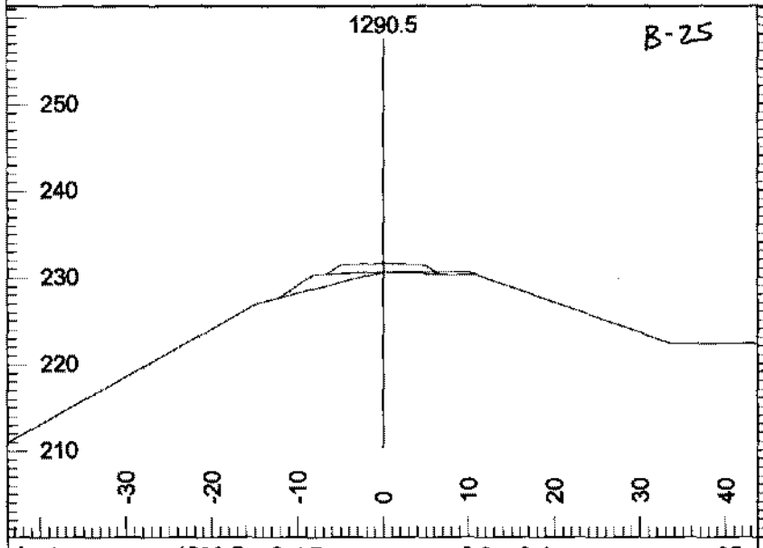
L-stn:	1073.0	Cut Dp:	4.0	Ssl:	-60
Grd.Nxt.	3	V.Offset:	0.0	Ssr:	55
Grd.Lst:	3	H. Offset:	7.3	CL Elev:	229.5



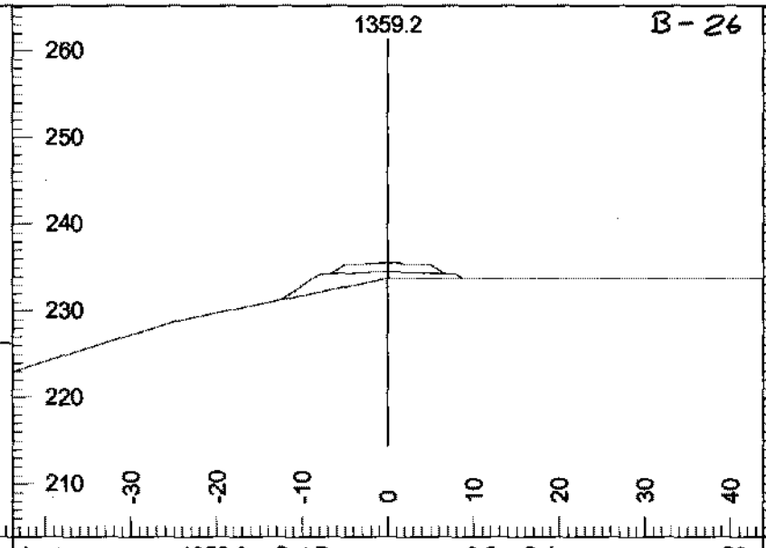
L-stn:	1151.8	Cut Dp:	3.6	Ssl:	-50
Grd.Nxt.	3	V.Offset:	-1.3	Ssr:	45
Grd.Lst:	3	H. Offset:	5.1	CL Elev:	232.0



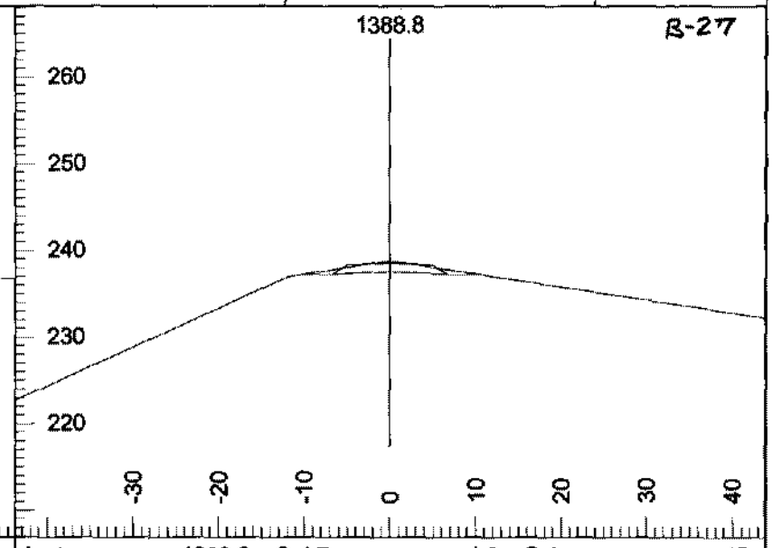
L-stn:	1199.3	Cut Dp:	-0.0	Ssl:	-50
Grd.Nxt.	-3	V.Offset:	0.0	Ssr:	0
Grd.Lst:	-3	H. Offset:	6.9	CL Elev:	230.5



L-stn:	1290.5	Cut Dp:	0.0	Ssl:	-25
Grd.Nxt.	6	V.Offset:	0.0	Ssr:	0
Grd.Lst:	0	H. Offset:	0.0	CL Elev:	230.7



L-stn:	1359.2	Cut Dp:	-0.8	Ssl:	-20
Grd.Nxt.	10	V.Offset:	0.8	Ssr:	0
Grd.Lst:	6	H. Offset:	0.0	CL Elev:	234.5



L-stn:	1388.8	Cut Dp:	1.3	Ssl:	-15
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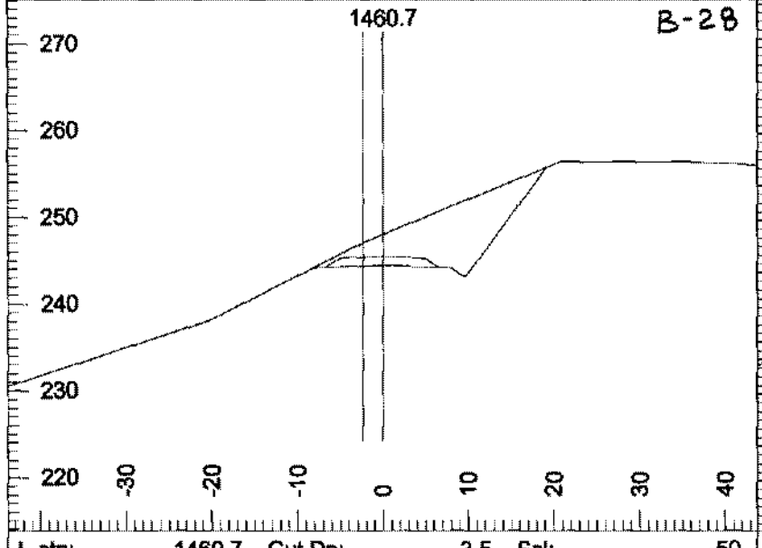
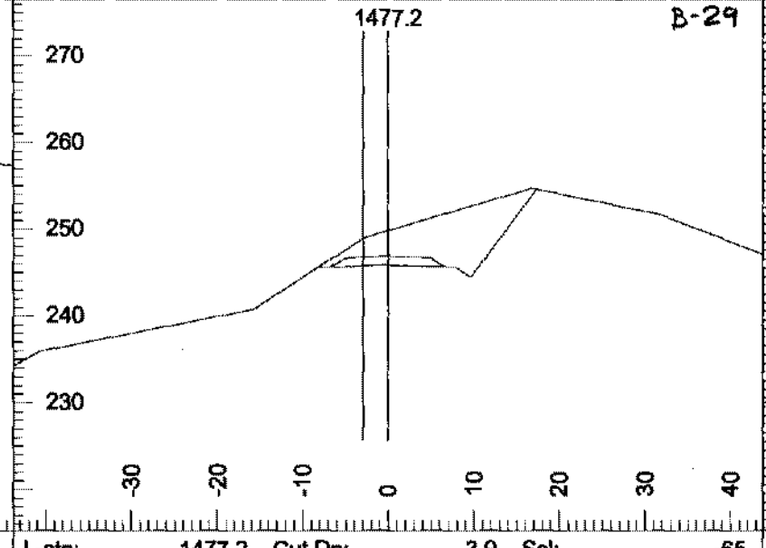
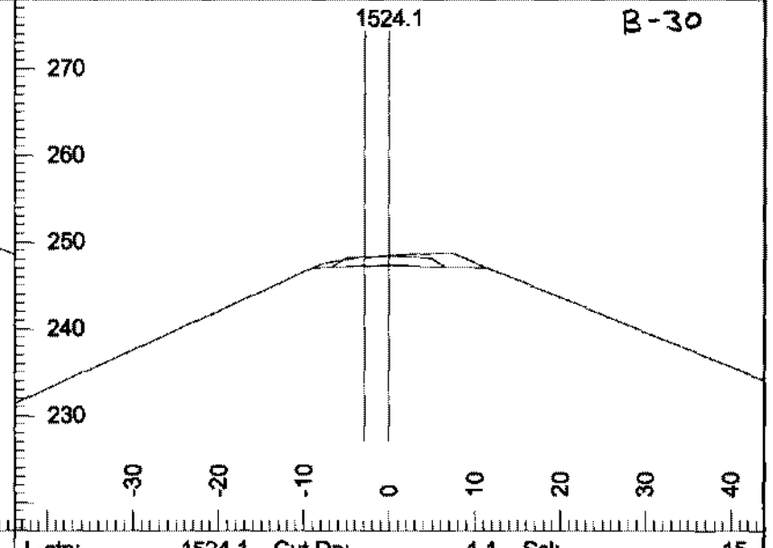
Grd.Lst:	10	H. Offset:	0.0	CL Elev:	237.5



L-stn:	1460.7	Cut Dp:	3.5	Ssl:	-50
Grd.Nxt.	10	V.Offset:	-2.6	Ssr:	40
Grd.Lst:	10	H. Offset:	2.3	CL Elev:	244.5

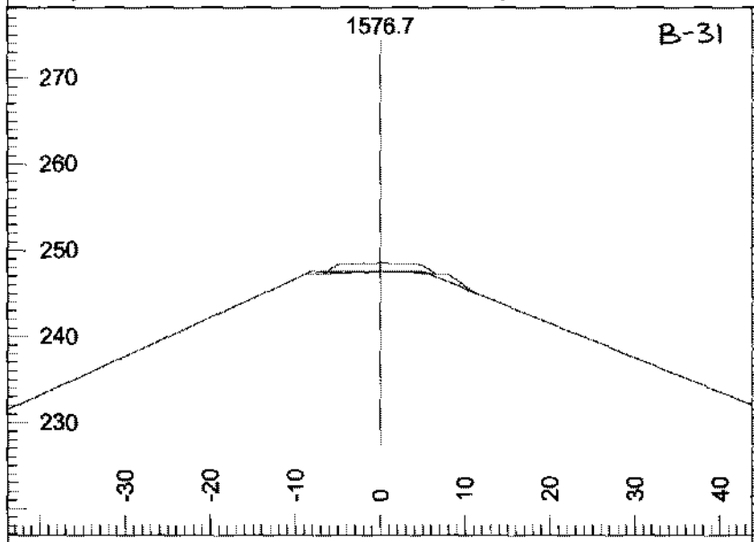


L-stn:	1477.2	Cut Dp:	3.9	Ssl:	-65
Grd.Nxt.	9	V.Offset:	-3.1	Ssr:	30
Grd.Lst:	9	H. Offset:	2.8	CL Elev:	245.9

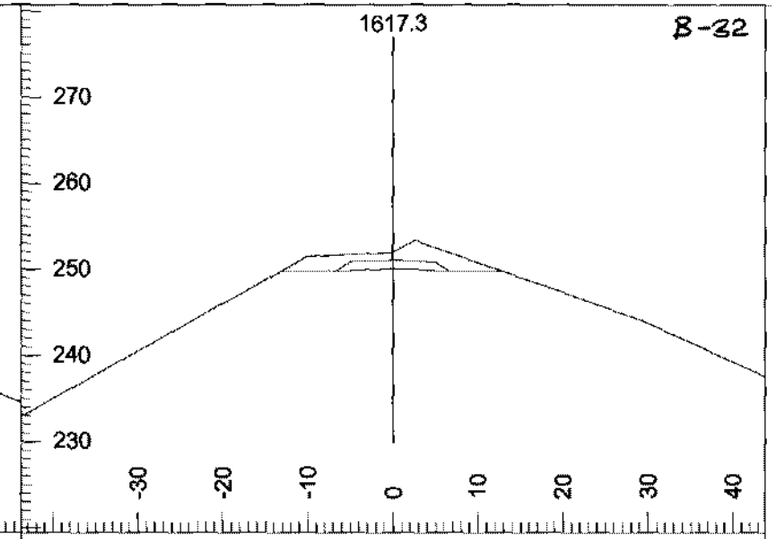


L-stn:	1524.1	Cut Dp:	1.1	Ssl:	-15
Grd.Nxt.	3	V.Offset:	-0.9	Ssr:	5
Grd.Lst:	3	H. Offset:	2.8	CL Elev:	247.4

ROADENG Section	Scale 1:240	P. 6
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080B		06/01/20



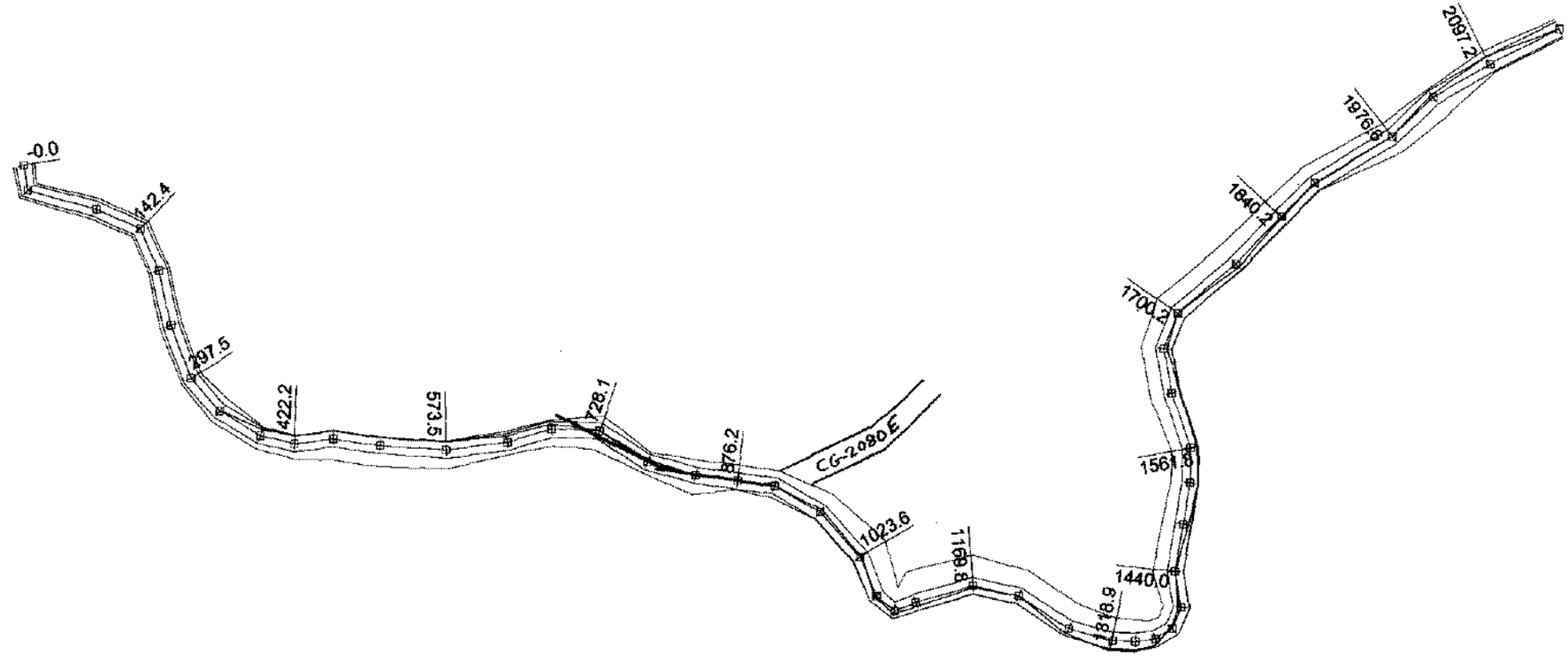
L-stn:	1576.7	Cut Dp:	0.0	Ssl:	0
Grd.Nxt.	6	V.Offset:	0.0	Ssr:	0
Grd.Lst:	0	H. Offset:	0.0	CL Elev:	247.6

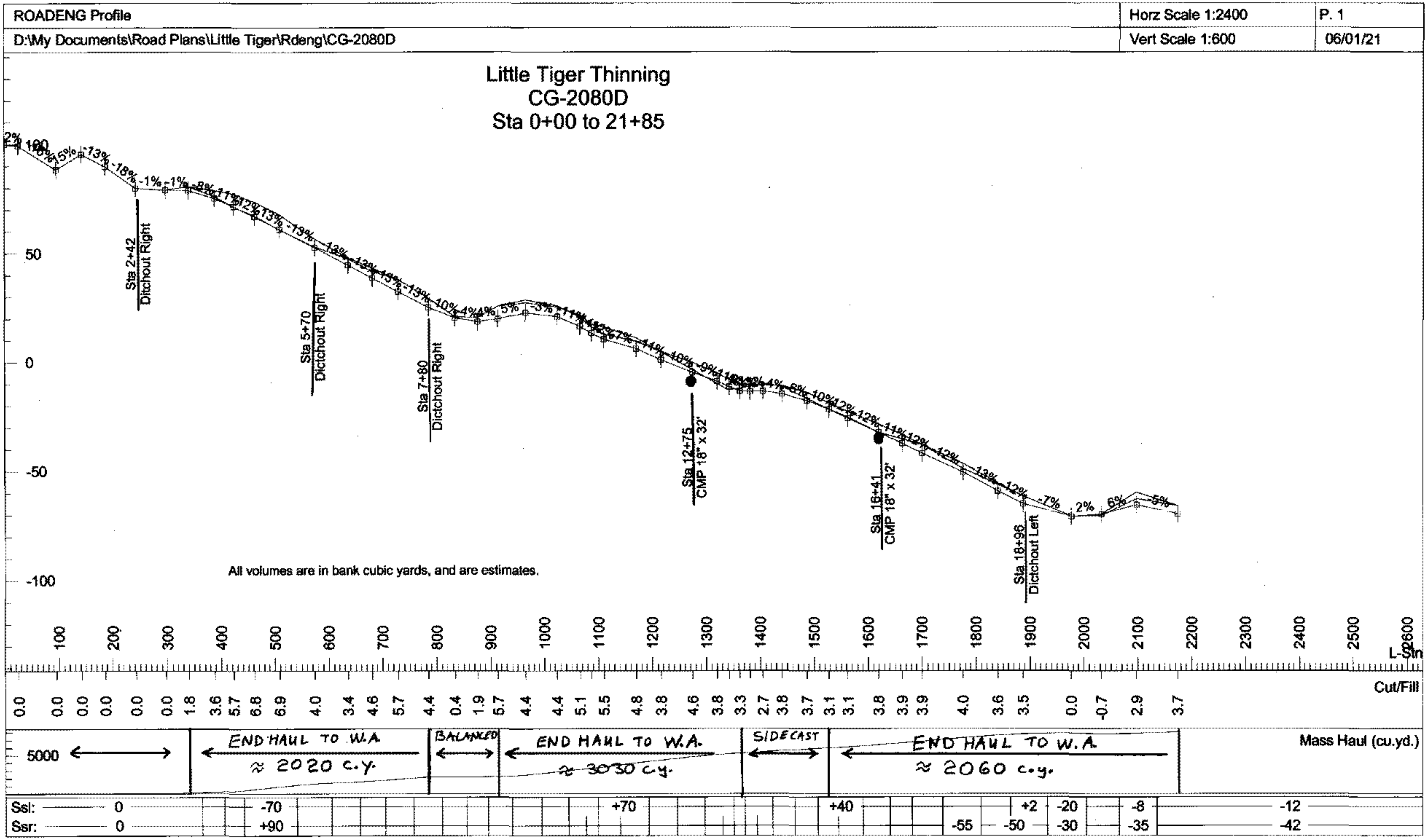


L-stn:	1617.3	Cut Dp:	1.9	Ssl:	-5
Grd.Nxt.	n/a	V.Offset:	-1.9	Ssr:	55
Grd.Lst:	6	H. Offset:	0.0	CL Elev:	250.0

ROADENG Plan	Scale 1:1800	P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080D		06/01/21

Little Tiger Thinning
CG-2080D
Sta 0+00 to 21+85





ROADENG Profile
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080D
Horz Scale 1:2400
Vert Scale 1:600
P. 1
06/01/21
Little Tiger Thinning
CG-2080D
Sta 0+00 to 21+85
Sta 2+42
Ditchout Right
Sta 5+70
Dictchout Right
Sta 7+80
Dictchout Right
Sta 12+75
CMP 18" x 32'
Sta 16+41
CMP 18" x 32'
Sta 18+96
Dictchout Left
All volumes are in bank cubic yards, and are estimates.
L-Stn
Cut/Fill
Mass Haul (cu.yd.)
5000
END HAUL TO W.A.
≈ 2020 c.y.
BALANCED
END HAUL TO W.A.
≈ 3030 c.y.
SIDECAST
END HAUL TO W.A.
≈ 2060 c.y.
Ssl:
Ssr:

ROADENG Data | P. 1

D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080D | 06/01/21

L-Stn ft.	P-Stn ft.	Cut Dp. ft.	Grade %	V.Brk %	Mass H. cu.yd.	
0.0	0.0	0.0		0	0.0	
25.2	25.2	0.0	-2	-13	6.6	
95.3	95.3	0.0	-16	31	25.1	
142.4	142.4	0.0	15	-28	37.5	
186.8	186.8	0.0	-13	-5	49.2	
242.3	242.3	0.0	-18	16	63.8	
297.5	297.5	0.0	-1	1	78.3	
340.2	340.2	1.8	-1	-7	120.0	8
387.8	386.9	3.6	0	-3	220.4	
422.9	419.4	5.7	-11	-1	331.9	
461.8	459.6	6.8	-12	-1	565.5	
508.5	505.9	6.9	-13	0	944.8	
573.9	570.1	4.0	-13	0	1315.1	
635.3	630.4	3.4	-13	0	1484.1	
680.1	676.9	4.6	-13	0	1636.7	
728.1	724.7	5.7	-13	0	1900.2	16
784.1	780.4	4.4	-10	3	2143.4	
833.9	830.0	0.4	-4	6	2183.2	18
876.2	872.3	1.9	4	8	2170.7	
913.2	909.3	5.7	-5	2	2226.0	20
964.4	961.0	4.4	-3	-8	2443.1	
1023.7	1020.9	4.4	-11	-8	2846.1	
1065.9	1063.7	5.1	-14	-3	3165.1	
1087.6	1088.7	4.1	-12	1	3302.0	
1110.1	1111.4	5.5	-7	5	3471.9	
1169.8	1170.5	4.8	-11	-4	4017.6	
1215.8	1216.0	3.8	-10	1	4372.3	
1274.4	1275.2	4.6	-9	0	4775.0	
1319.5	1324.0	3.8	-11	-2	5052.8	
1342.4	1350.7	3.5	-9	2	5168.7	30
1362.3	1372.9	3.3	1	8	5255.1	
1381.3	1390.7	3.0	1	2	5325.7	32
1404.5	1412.7	2.7	-4	-5	5404.6	33
1440.0	1447.5	3.7	-6	-3	5553.7	
1486.6	1493.8	3.7	-10	-3	5786.3	
1527.7	1537.1	3.1	12	-2	5963.7	36
1562.5	1573.8	3.1	-12	0	6094.3	
1618.7	1629.6	3.8	-11	0	6344.2	
1663.0	1672.4	3.9	-12	-1	6578.9	
1700.2	1708.7	3.9	-12	0	6793.5	40
1775.8	1784.7	4.0	-13	-2	7246.2	
1840.3	1849.5	3.6	-12	1	7595.7	
1886.7	1895.8	3.5	-7	6	7772.9	
1976.6	1985.6	0.0	2	9	7850.1	44
2032.3	2041.6	-0.7	6	4	7791.6	
2097.4	2108.8	2.9	-5	-12	7847.4	
2173.7	2184.7	3.7		0	8020.7	

END HAUL TO WA 2020 C.Y.

5255
2226
3029

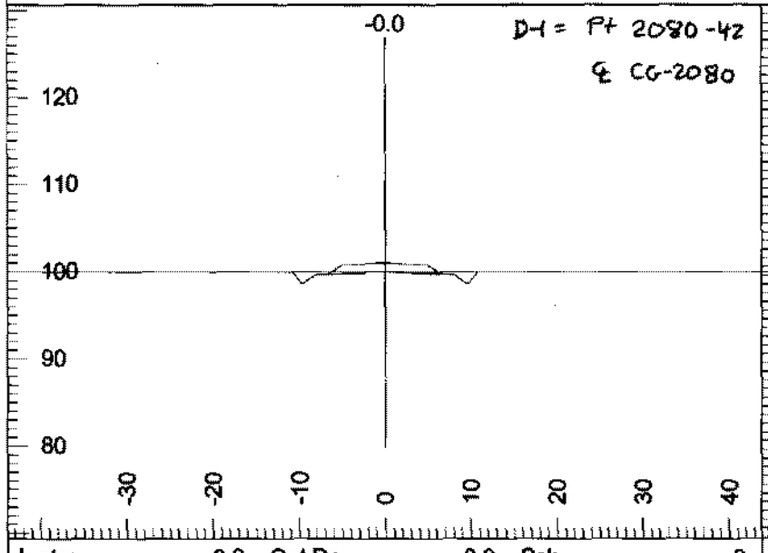
END HAUL TO W.A. 3029 C.Y.

8021
5964
2057

END HAUL TO W.A. 2057 C.Y.

ROADENG Section | CG-2080D | Scale 1:240 | P. 1

D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080D | 06/01/21



L-stn:	-0.0	Cut Dp:	0.0	Ssl:	0
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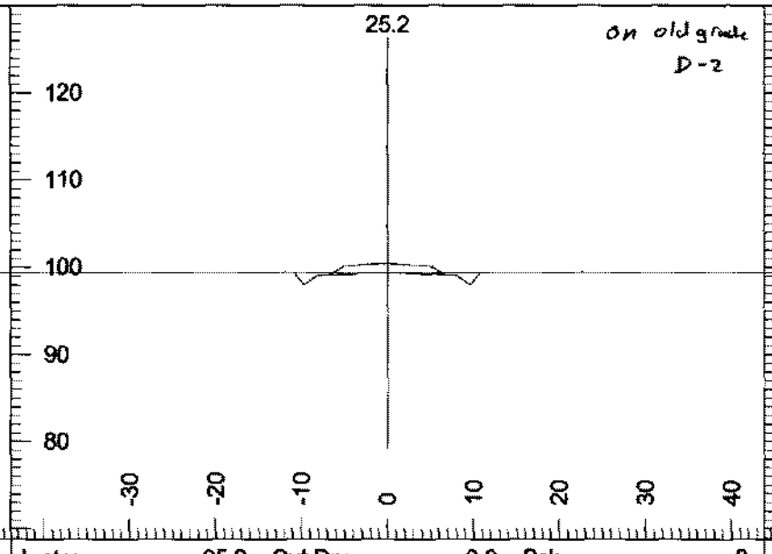
Grd.Lst:	n/a	H. Offset:	0.0	CL Elev:	100.0



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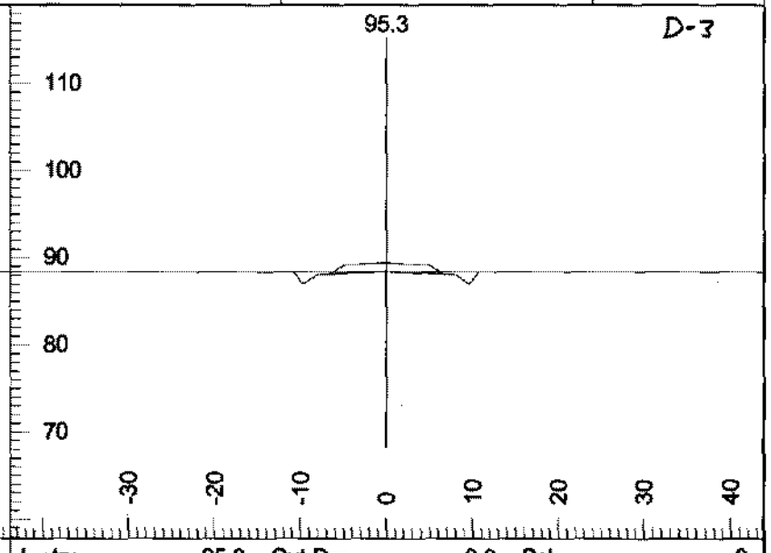
Grd.Lst:	-2	H. Offset:	0.0	CL Elev:	99.4



L-stn:	95.3	Cut Dp:	0.0	Ssl:	0
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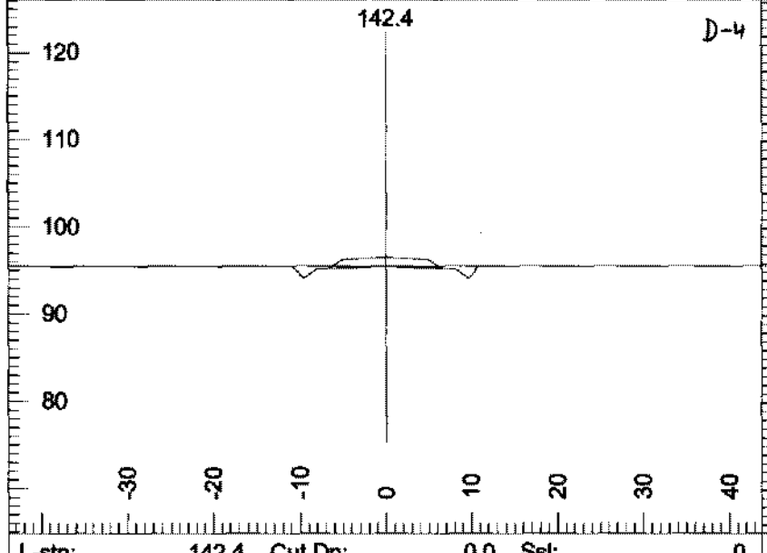
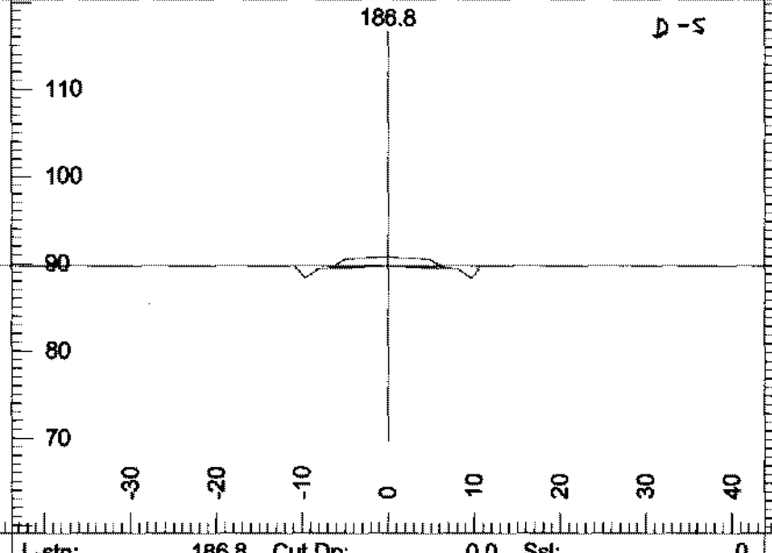
Grd.Lst:	-16	H. Offset:	0.0	CL Elev:	88.4



L-stn:	142.4	Cut Dp:	0.0	Ssl:	0
Grd.Nxt.	-13	V.Offset:	0.0	Ssr:	0
Grd.Lst:	15	H. Offset:	0.0	CL Elev:	95.5



L-stn:	186.8	Cut Dp:	0.0	Ssl:	0
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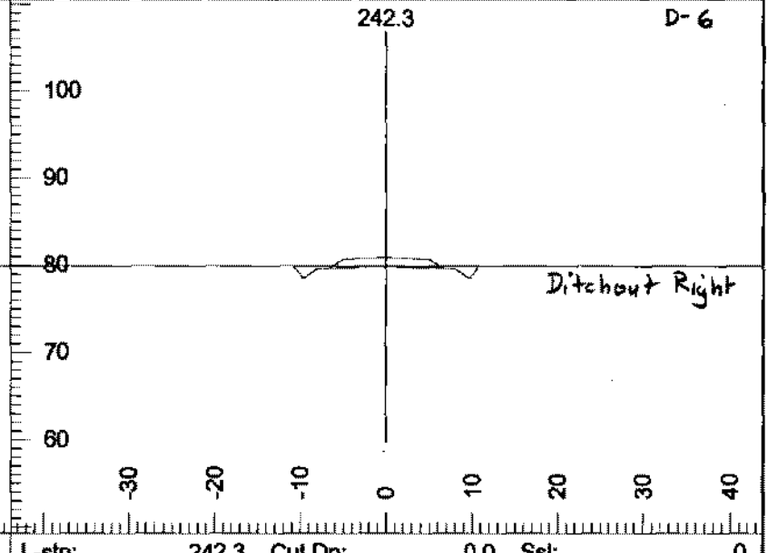
Grd.Lst:	-13	H. Offset:	0.0	CL Elev:	89.7



L-stn:	242.3	Cut Dp:	0.0	Ssl:	0
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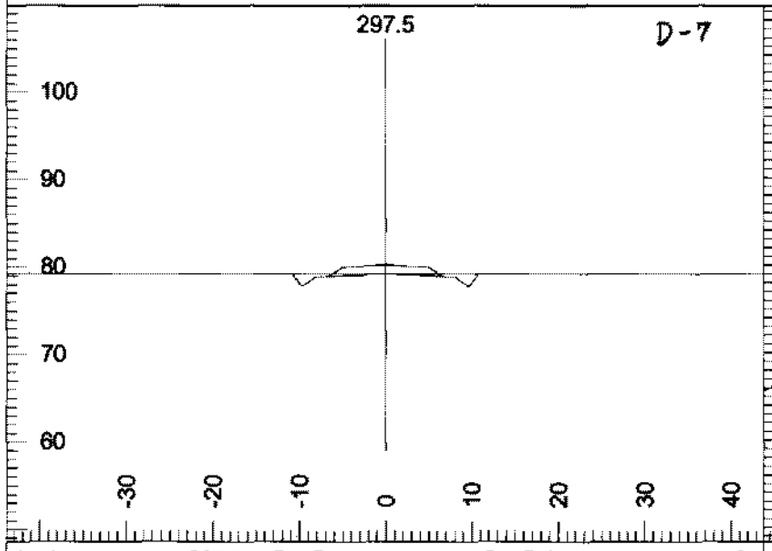
Grd.Lst:	-18	H. Offset:	0.0	CL Elev:	79.9



L-stn:	297.5	Cut Dp:	0.0	Ssl:	0
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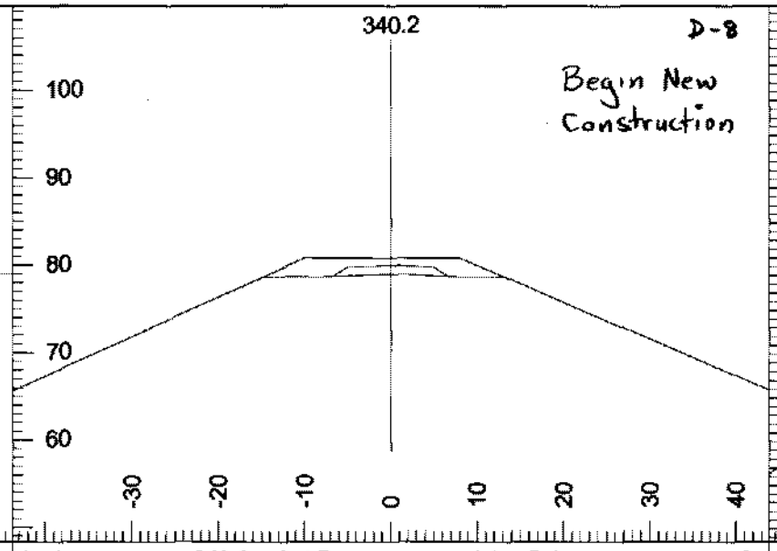
Grd.Lst:	-1	H. Offset:	0.0	CL Elev:	79.2



L-stn:	340.2	Cut Dp:	1.8	Ssl:	0
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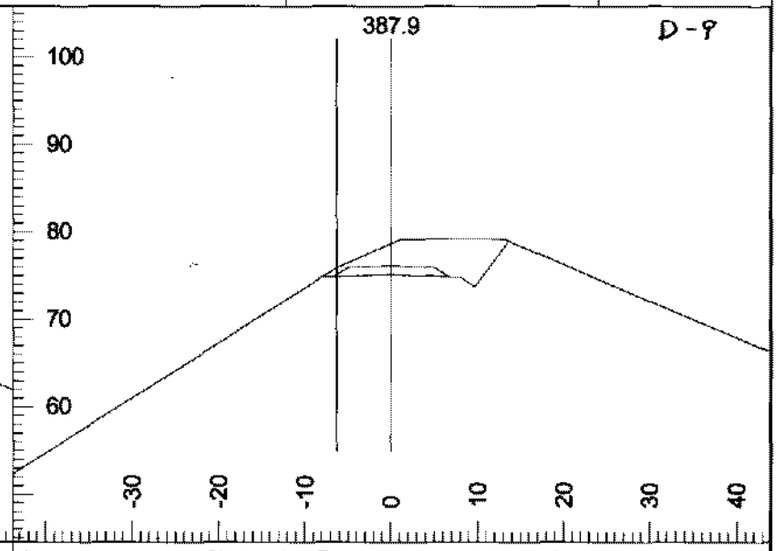
Grd.Lst:	-1	H. Offset:	0.0	CL Elev:	79.0



L-stn:	387.9	Cut Dp:	3.6	Ssl:	-63
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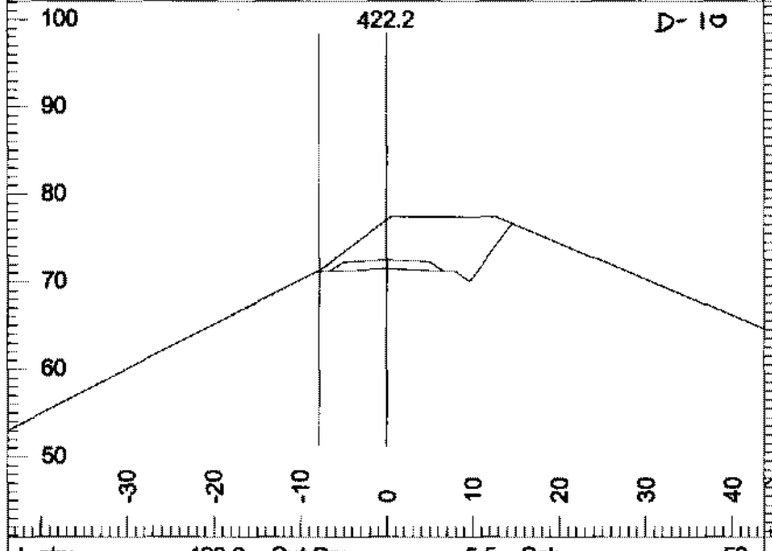
Grd.Lst:	-11	H. Offset:	6.2	CL Elev:	75.2



L-stn:	422.2	Cut Dp:	5.5	Ssl:	-52
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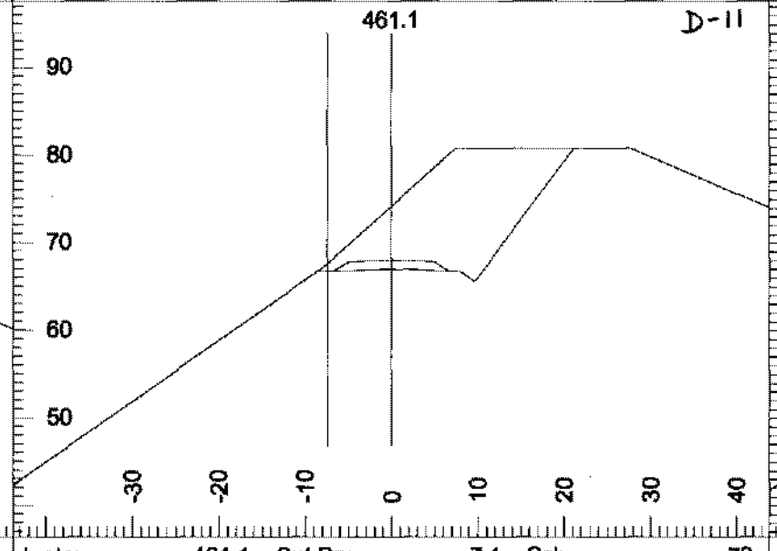
Grd.Lst:	-11	H. Offset:	7.5	CL Elev:	71.5



L-stn:	461.1	Cut Dp:	7.1	Ssl:	-70
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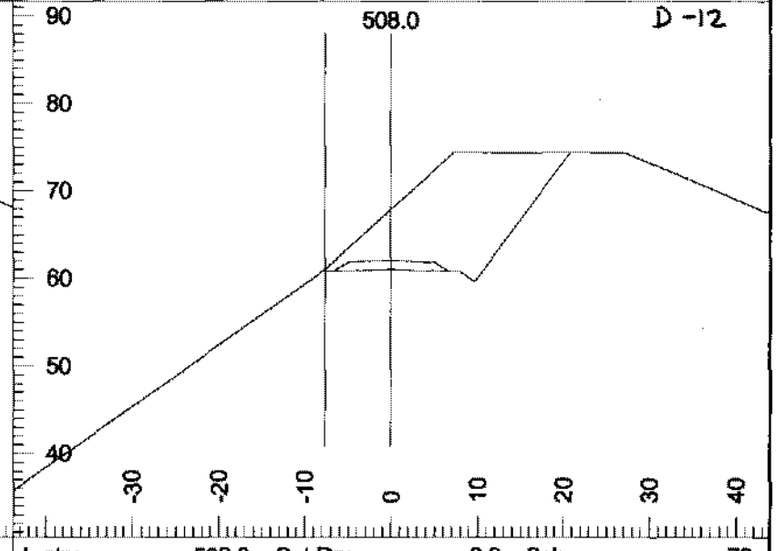
Grd.Lst:	-12	H. Offset:	7.5	CL Elev:	67.0



L-stn:	508.0	Cut Dp:	6.8	Ssl:	-70
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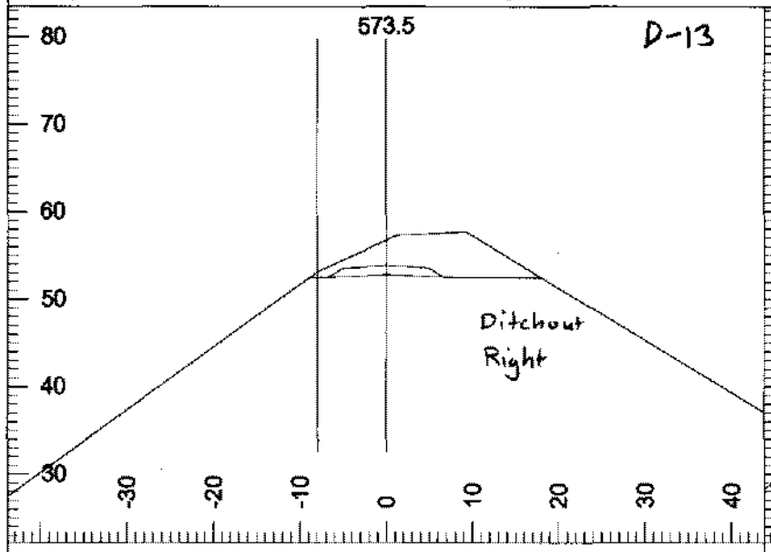
Grd.Lst:	-13	H. Offset:	7.6	CL Elev:	61.1

ROADENG Section	Scale 1:240	P. 3
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080D		06/01/21



L-stn:	573.5	Cut Dp:	3.9	Ssl:	-72
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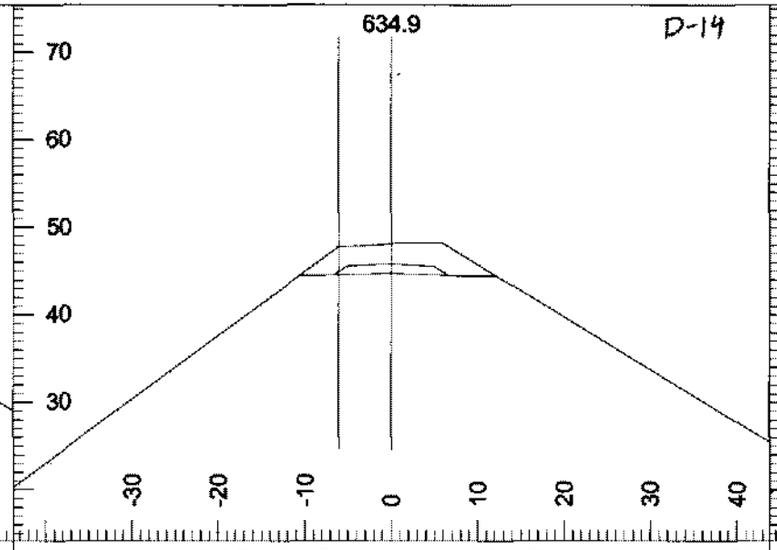
Grd.Lst:	-13	H. Offset:	7.8	CL Elev:	52.8



L-stn:	634.9	Cut Dp:	3.3	Ssl:	-73
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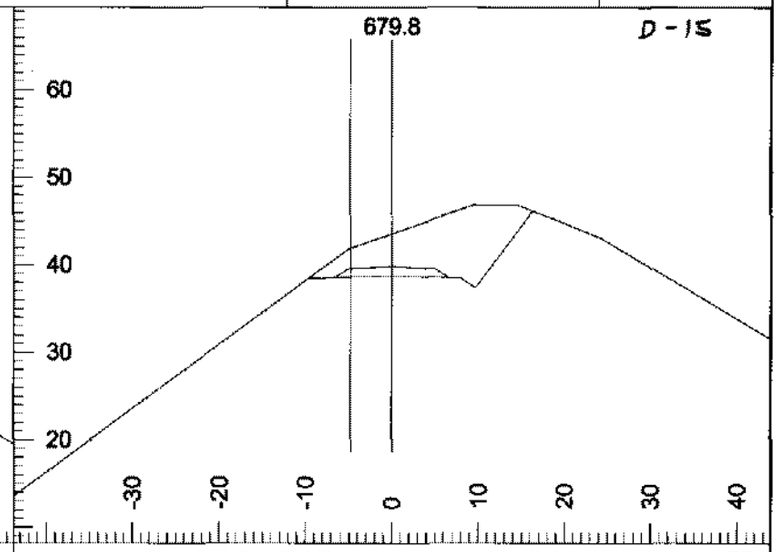
Grd.Lst:	-13	H. Offset:	6.1	CL Elev:	44.7



L-stn:	679.8	Cut Dp:	4.8	Ssl:	-75
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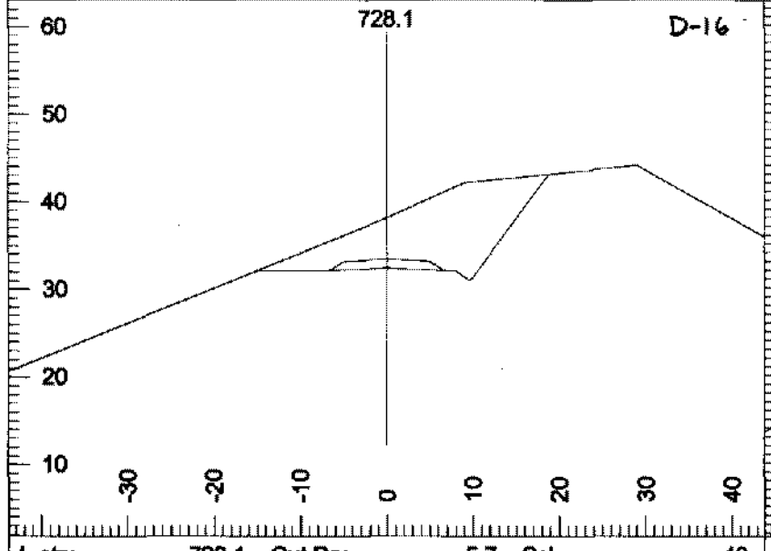
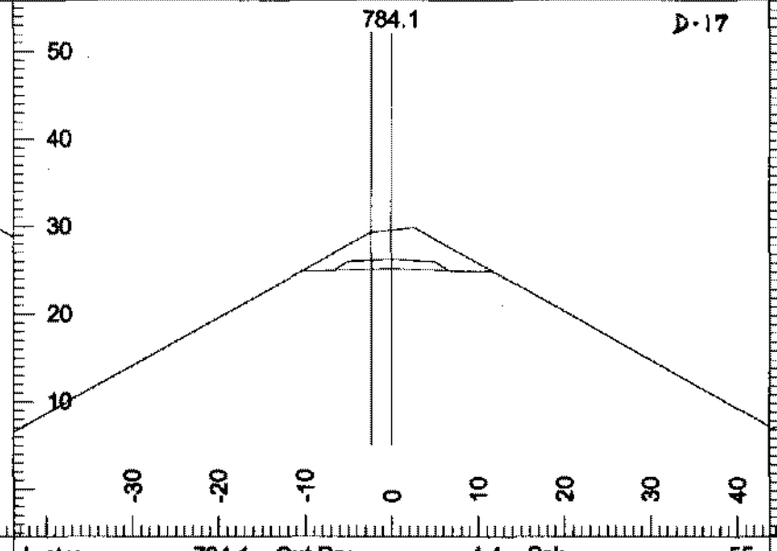
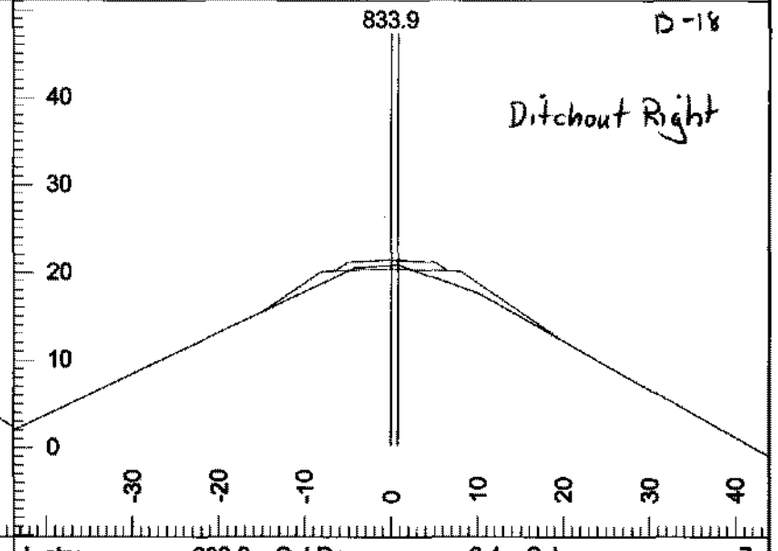
Grd.Lst:	-13	H. Offset:	4.9	CL Elev:	38.8



L-stn:	728.1	Cut Dp:	5.7	Ssl:	-40
Grd.Nxt.	-13	V.Offset:	-5.7	Ssr:	45
Grd.Lst:	-13	H. Offset:	0.0	CL Elev:	32.5

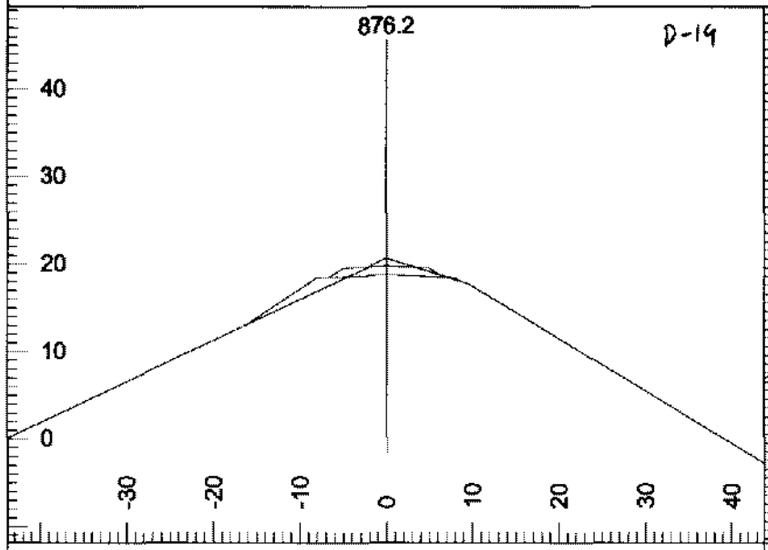


L-stn:	784.1	Cut Dp:	4.4	Ssl:	-55
Grd.Nxt.	-10	V.Offset:	-4.1	Ssr:	10
Grd.Lst:	-13	H. Offset:	2.3	CL Elev:	25.2



L-stn:	833.9	Cut Dp:	0.4	Ssl:	-7
Grd.Nxt.	-4	V.Offset:	-0.4	Ssr:	-35
Grd.Lst:	-4	H. Offset:	-0.8	CL Elev:	20.4

ROADENG Section	Scale 1:240	P. 4
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080D		06/01/21



L-stn:	876.2	Cut Dp:	1.9	Ssl:	-47
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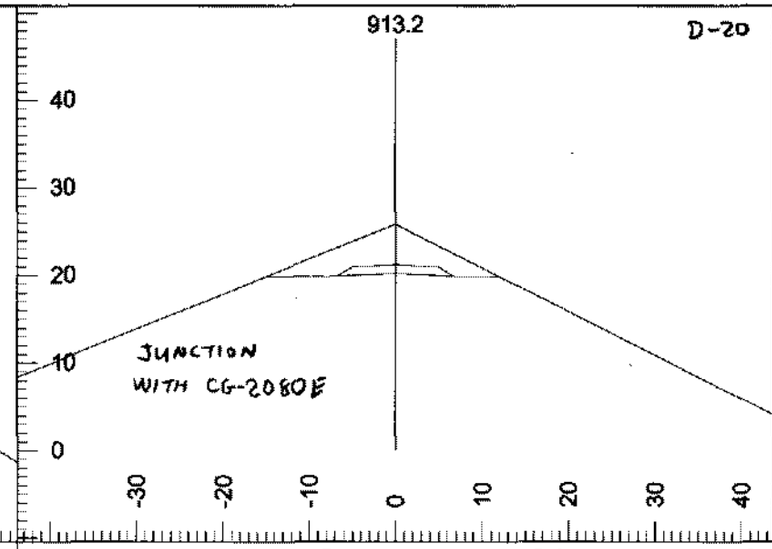
Grd.Lst:	-4	H. Offset:	0.0	CL Elev:	18.8



L-stn:	913.2	Cut Dp:	5.7	Ssl:	-40
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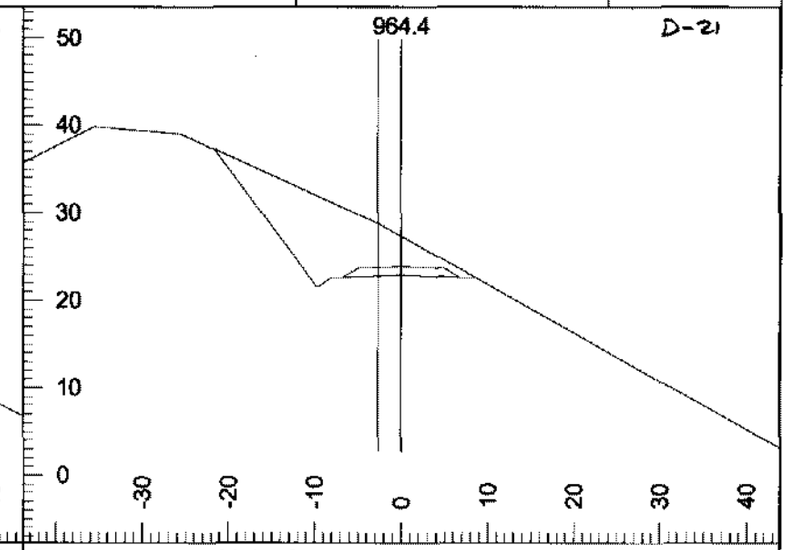
Grd.Lst:	4	H. Offset:	0.0	CL Elev:	20.2



L-stn:	964.4	Cut Dp:	4.4	Ssl:	45
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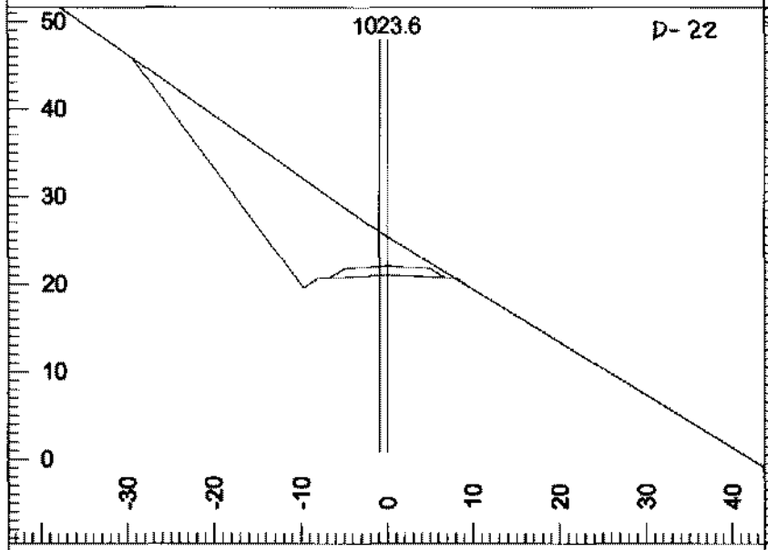

L-stn:	1023.6	Cut Dp:	4.4	Ssl:	70
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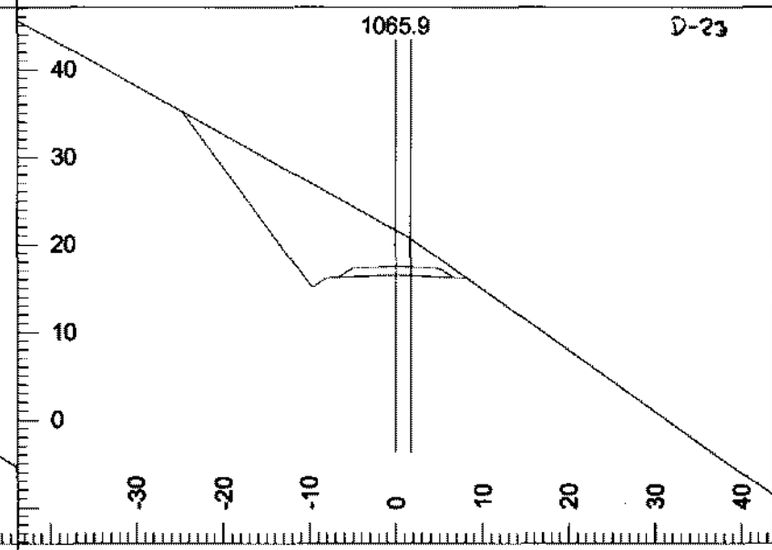

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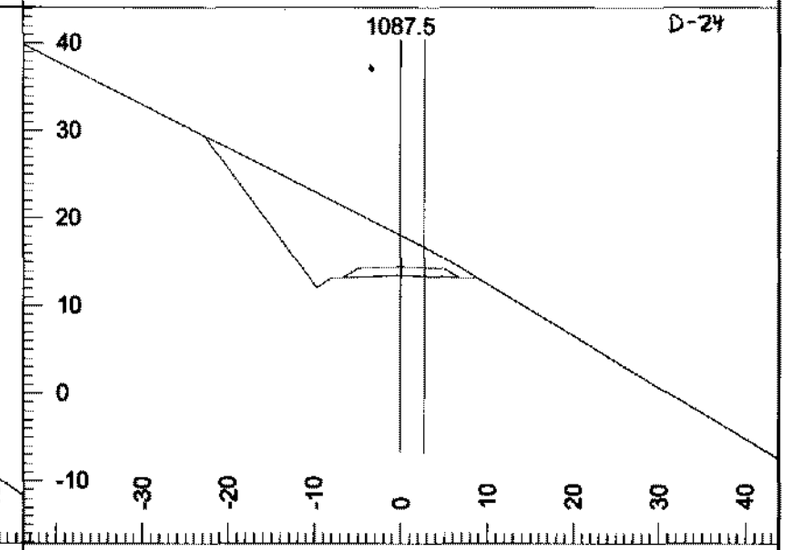
Grd.Lst:	-14	H. Offset:	-1.8	CL Elev:	16.5



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Grd.Lst:	-14	H. Offset:	-3.1	CL Elev:	13.5

ROADENG Section | Scale 1:240 | P. 5

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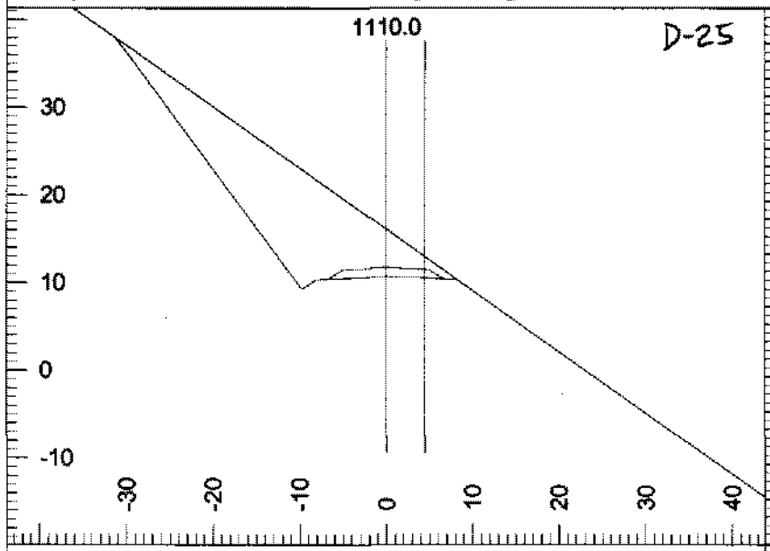

L-stn:	1110.0	Cut Dp:	5.4	Ssl:	70
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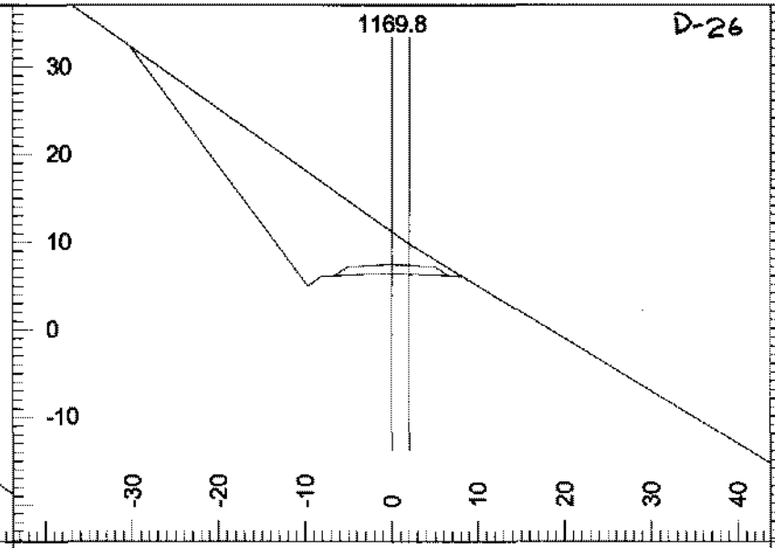

L-stn:	1169.8	Cut Dp:	4.8	Ssl:	70
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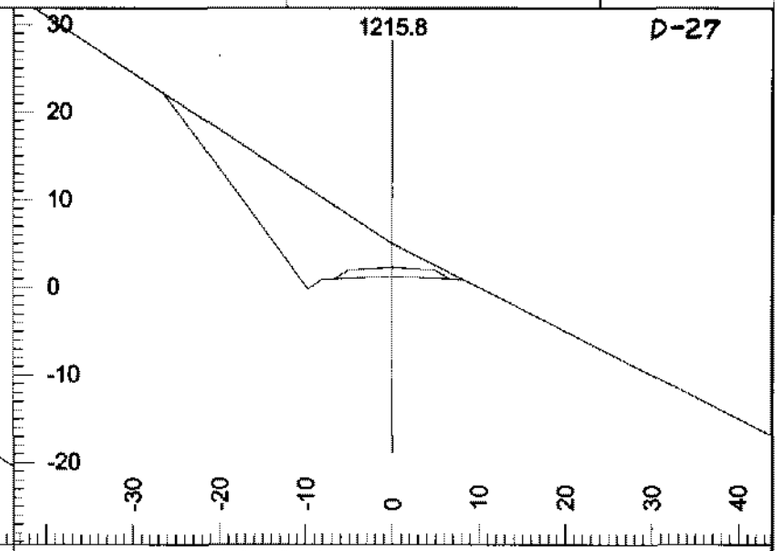
Grd.Lst:	-7	H. Offset:	-2.0	CL Elev:	6.4



L-stn:	1215.8	Cut Dp:	3.8	Ssl:	65
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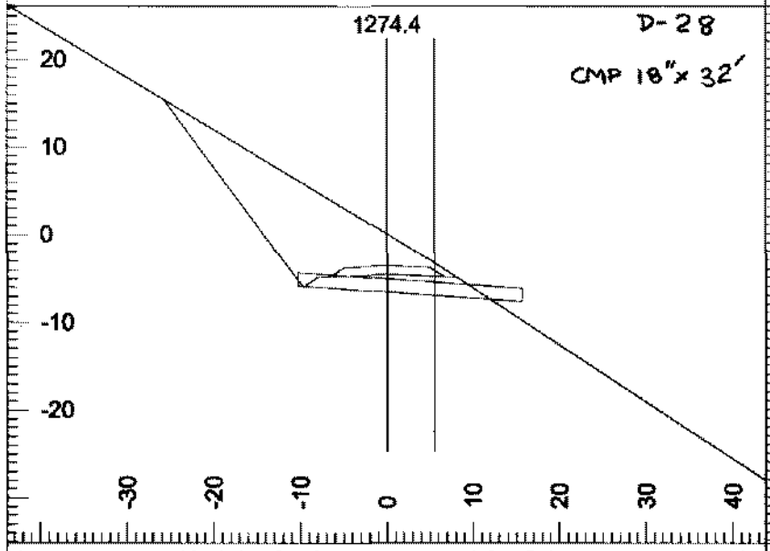
Grd.Lst:	-11	H. Offset:	0.0	CL Elev:	1.2



L-stn:	1274.4	Cut Dp:	4.6	Ssl:	60
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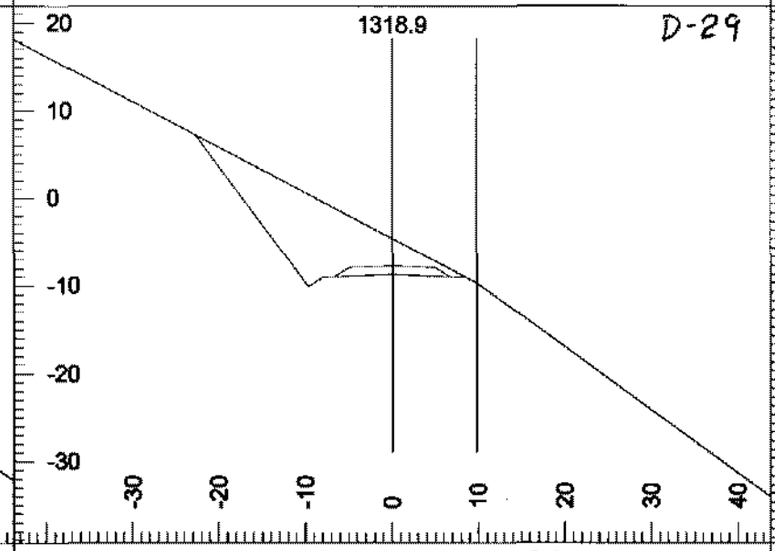
Grd.Lst:	-10	H. Offset:	-5.6	CL Elev:	-4.5



L-stn:	1318.9	Cut Dp:	4.1	Ssl:	52
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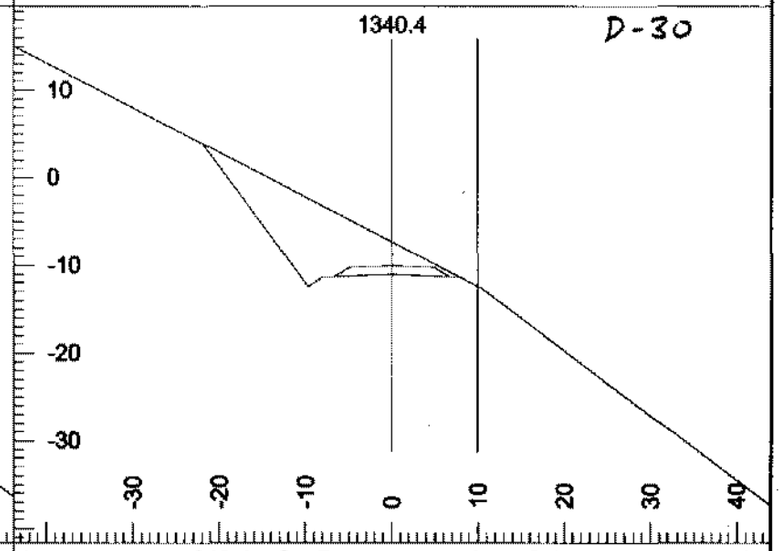
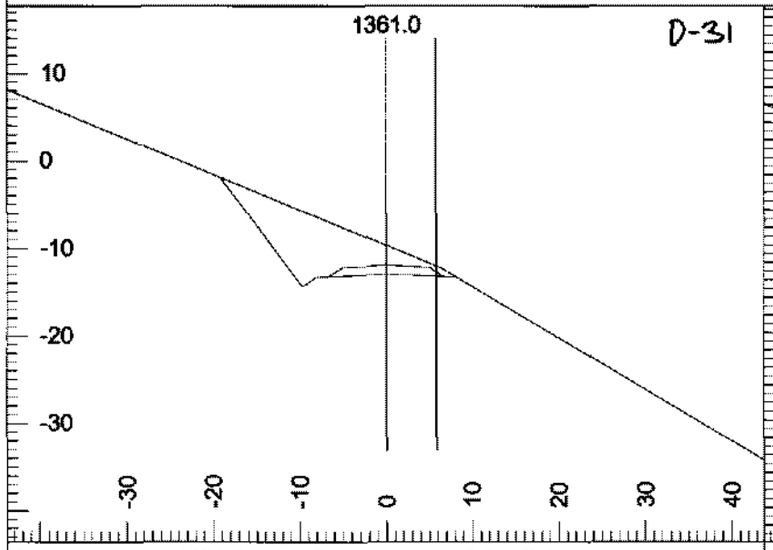
Grd.Lst:	-9	H. Offset:	-9.9	CL Elev:	-8.6

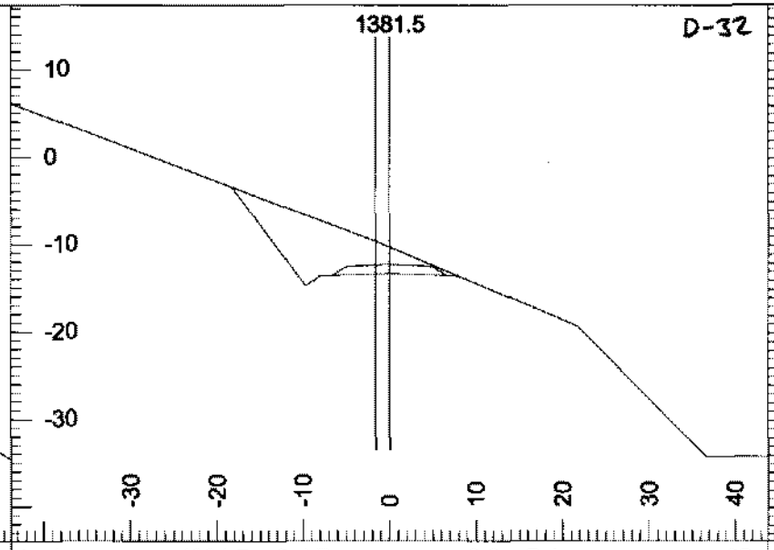


L-stn:	1340.4	Cut Dp:	3.7	Ssl:	52
Grd.Nxt.	-11	V.Offset:	1.6	Ssr:	-75
Grd.Lst:	-11	H. Offset:	-10.1	CL Elev:	-11.0

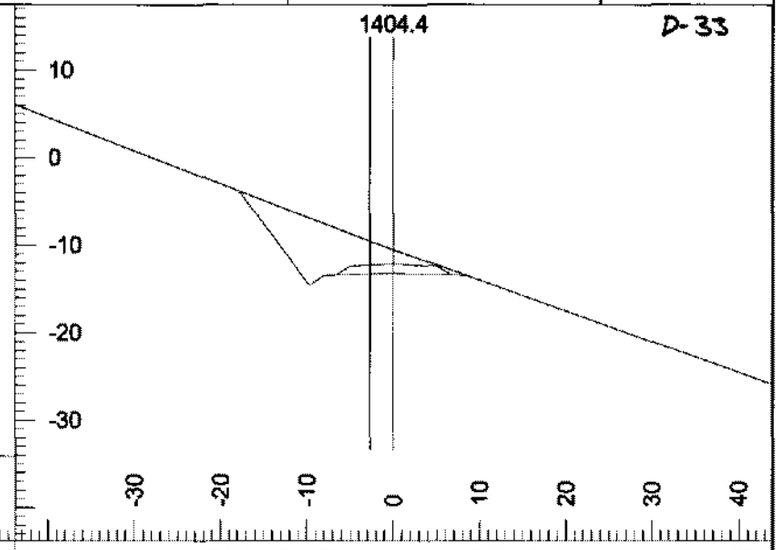
ROADENG Section	Scale 1:240	P. 6
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080D		06/01/21



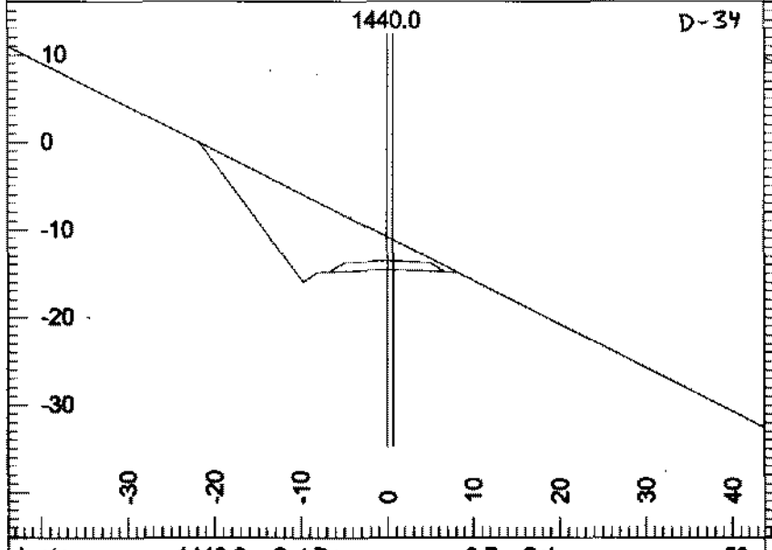
L-stn:	1361.0	Cut Dp:	3.3	Ssl:	45
Grd.Nxt.	-9	V.Offset:	-0.6	Ssr:	-65
Grd.Lst:	-9	H. Offset:	-5.9	CL Elev:	-12.9



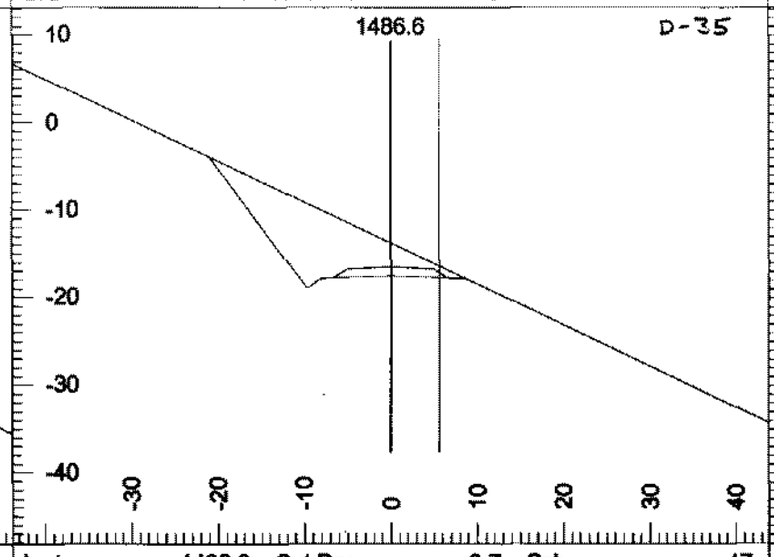
L-stn:	1381.5	Cut Dp:	3.0	Ssl:	38
Grd.Nxt.	1	V.Offset:	-3.6	Ssr:	-42
Grd.Lst:	1	H. Offset:	1.5	CL Elev:	-13.3



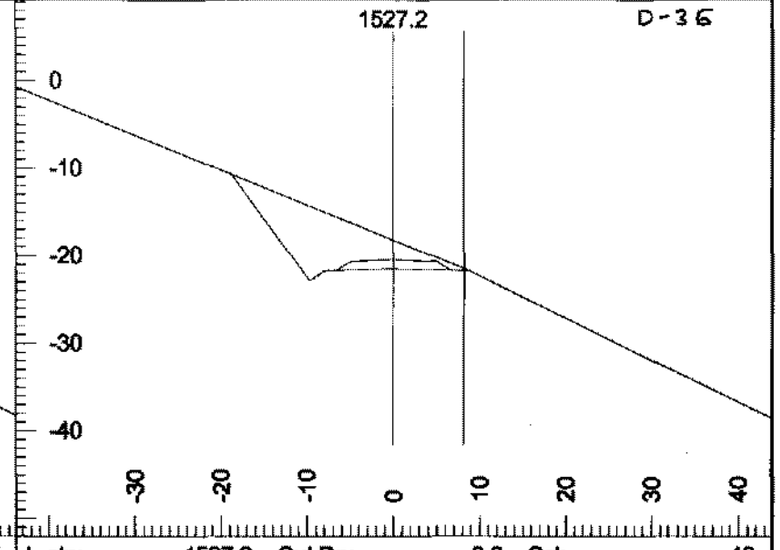
L-stn:	1404.4	Cut Dp:	2.7	Ssl:	38
Grd.Nxt.	1	V.Offset:	-3.6	Ssr:	-35
Grd.Lst:	1	H. Offset:	2.7	CL Elev:	-13.1



L-stn:	1440.0	Cut Dp:	3.7	Ssl:	50
Grd.Nxt.	-6	V.Offset:	-3.4	Ssr:	-50
Grd.Lst:	-6	H. Offset:	-0.7	CL Elev:	-14.5

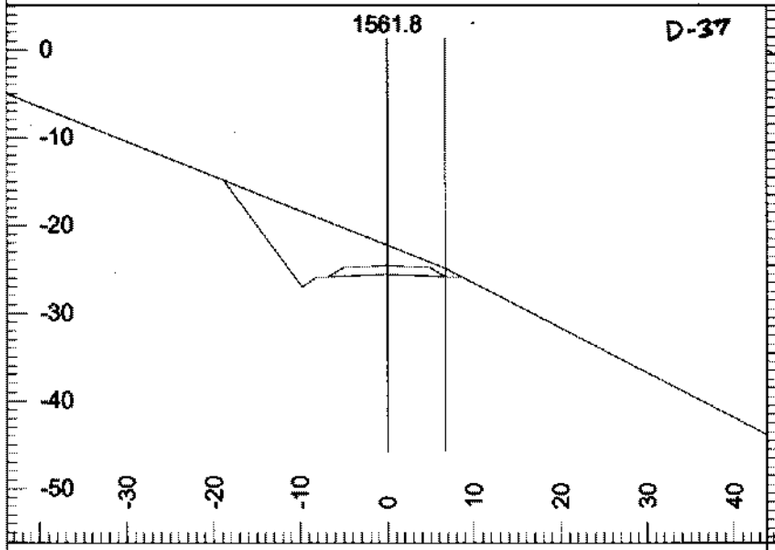


L-stn:	1486.6	Cut Dp:	3.7	Ssl:	47
Grd.Nxt.	-6	V.Offset:	-1.1	Ssr:	-47
Grd.Lst:	-6	H. Offset:	-5.6	CL Elev:	-17.5

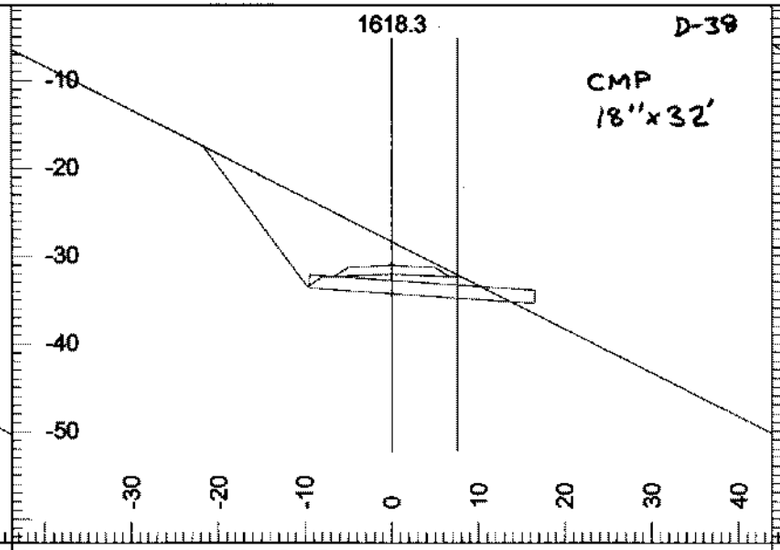


L-stn:	1527.2	Cut Dp:	3.2	Ssl:	40
Grd.Nxt.	-10	V.Offset:	0.1	Ssr:	-48
Grd.Lst:	-10	H. Offset:	-8.2	CL Elev:	-21.4

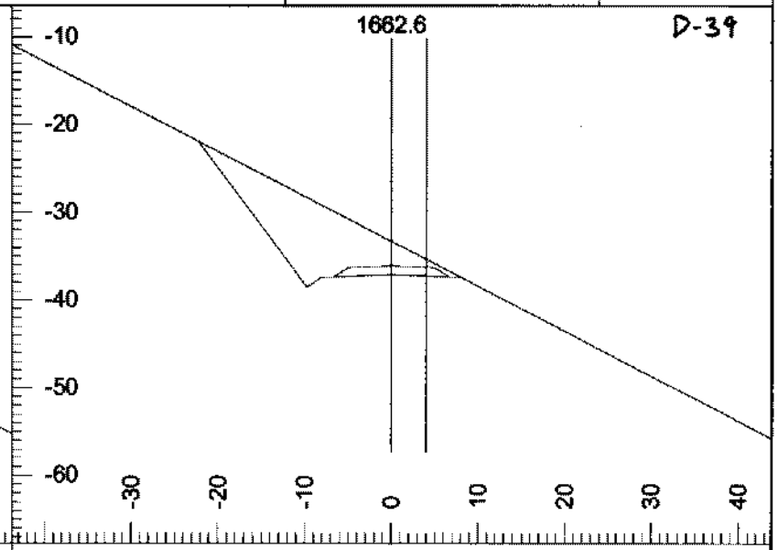
ROADENG Section	Scale 1:240	P. 7
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080D		06/01/21



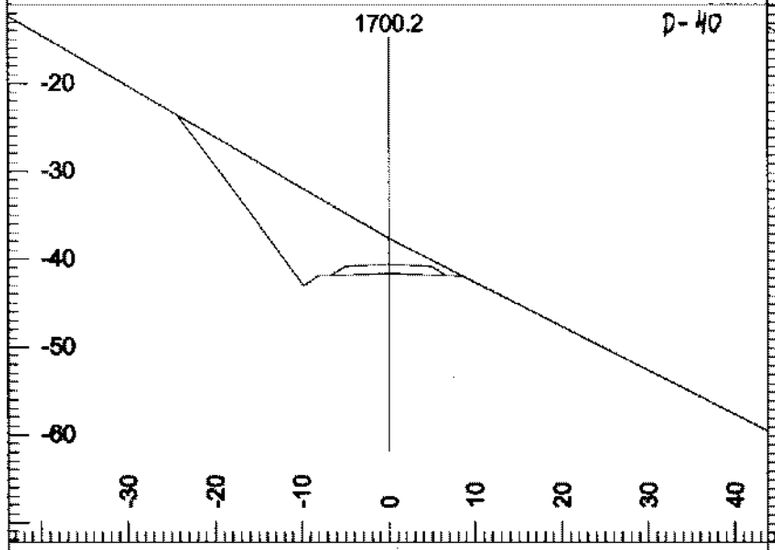
L-stn:	1561.8	Cut Dp:	3.3	Ssl:	40
Grd.Nxt.	-12	V.Offset:	-0.6	Ssr:	-52
Grd.Lst:	-12	H. Offset:	-6.8	CL Elev:	-25.5



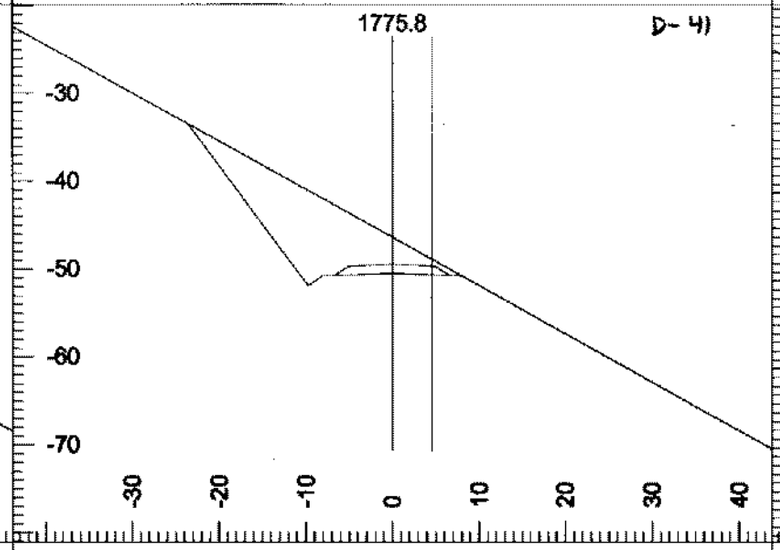
L-stn:	1618.3	Cut Dp:	3.7	Ssl:	50
Grd.Nxt.	-12	V.Offset:	0.0	Ssr:	-50
Grd.Lst:	-12	H. Offset:	-7.5	CL Elev:	-32.1



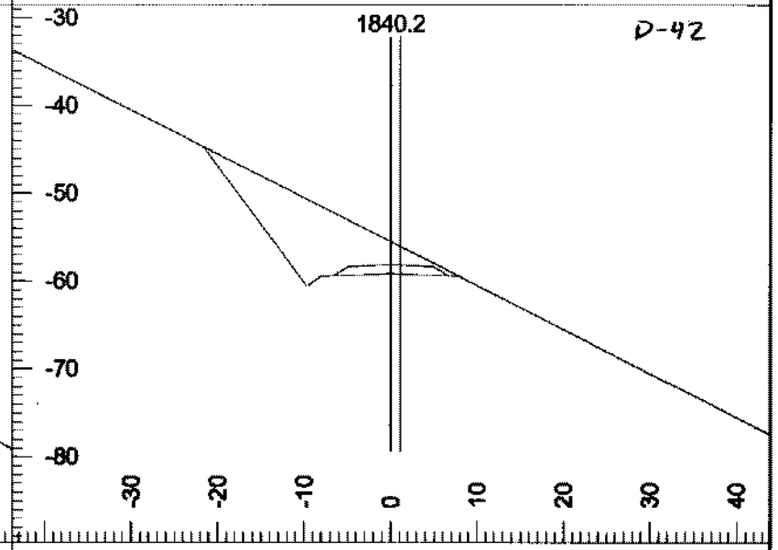
L-stn:	1662.6	Cut Dp:	3.8	Ssl:	52
Grd.Nxt.	-11	V.Offset:	-1.9	Ssr:	-52
Grd.Lst:	-11	H. Offset:	-3.7	CL Elev:	-37.1



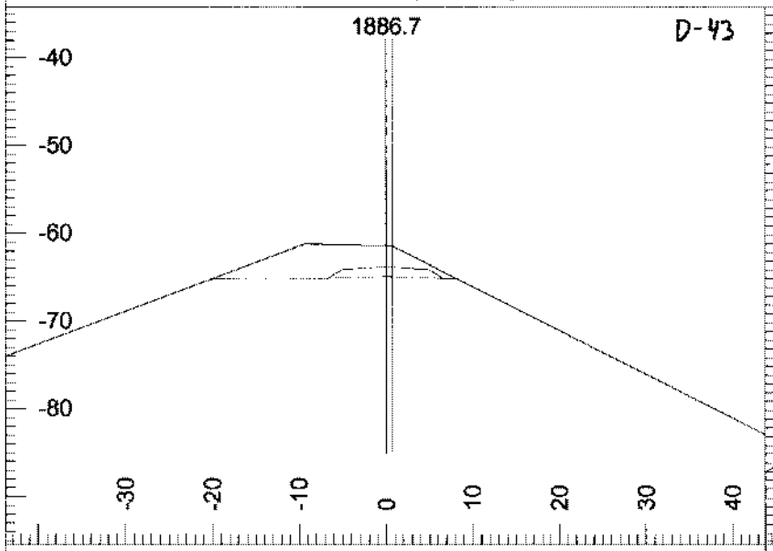
L-stn:	1700.2	Cut Dp:	3.9	Ssl:	58
Grd.Nxt.	-12	V.Offset:	-3.9	Ssr:	-50
Grd.Lst:	-12	H. Offset:	0.0	CL Elev:	-41.6



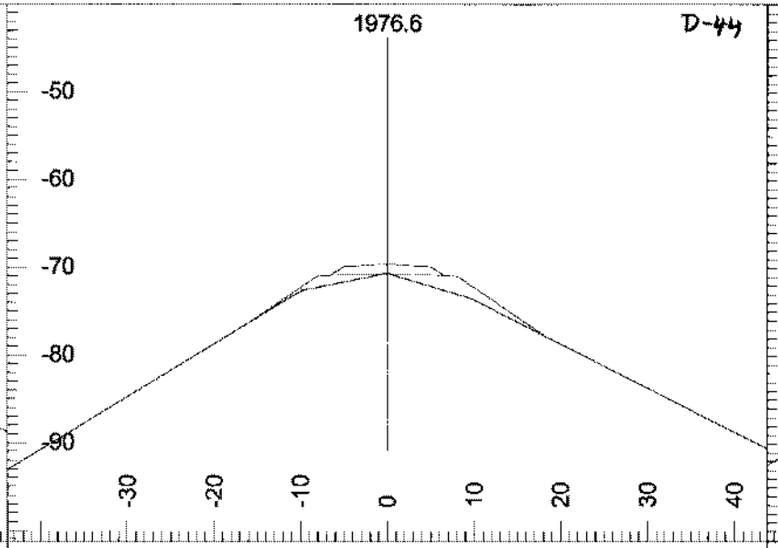
L-stn:	1775.8	Cut Dp:	4.0	Ssl:	55
Grd.Nxt.	-13	V.Offset:	-1.6	Ssr:	-55
Grd.Lst:	-12	H. Offset:	-4.5	CL Elev:	-50.4



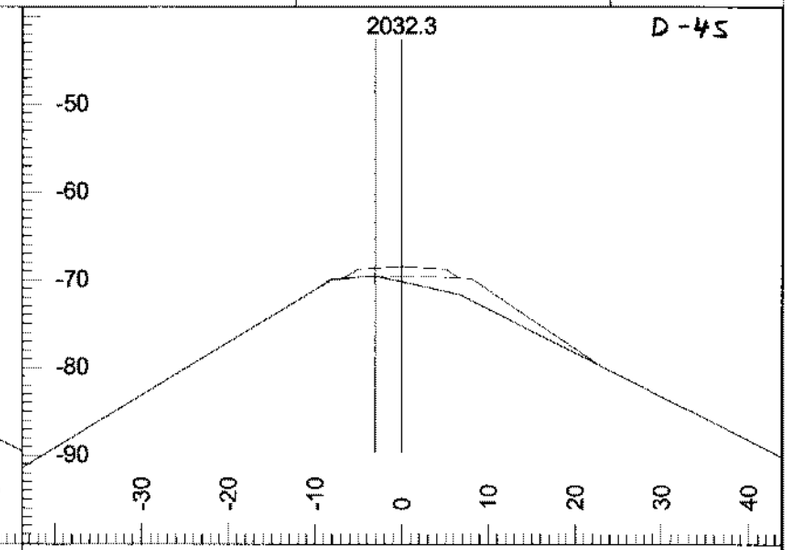
L-stn:	1840.2	Cut Dp:	3.6	Ssl:	50
Grd.Nxt.	-13	V.Offset:	-3.0	Ssr:	-50
Grd.Lst:	-13	H. Offset:	-1.1	CL Elev:	-59.1



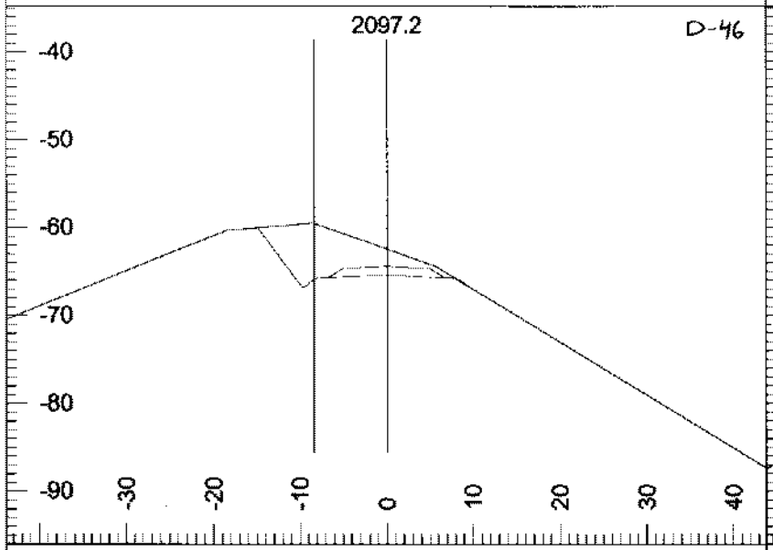
L-stn:	1886.7	Cut Dp:	3.5	Ssl:	2
Grd.Nxt.	-7	V.Offset:	-3.5	Ssr:	-50
Grd.Lst:	-12	H. Offset:	-0.7	CL Elev:	-64.9



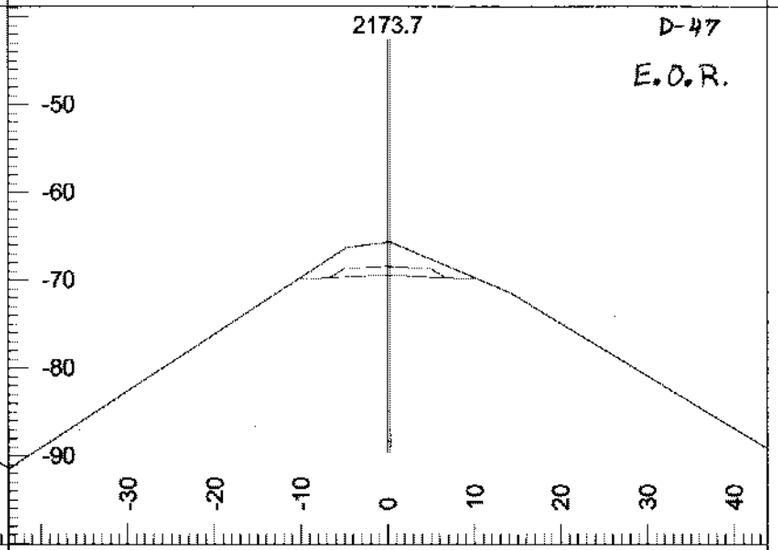
L-stn:	1976.6	Cut Dp:	0.0	Ssl:	-20
Grd.Nxt.	2	V.Offset:	0.0	Ssr:	-30
Grd.Lst:	-7	H. Offset:	0.0	CL Elev:	-70.7



L-stn:	2032.3	Cut Dp:	-0.7	Ssl:	-10
Grd.Nxt.	6	V.Offset:	0.0	Ssr:	-22
Grd.Lst:	2	H. Offset:	3.1	CL Elev:	-69.6



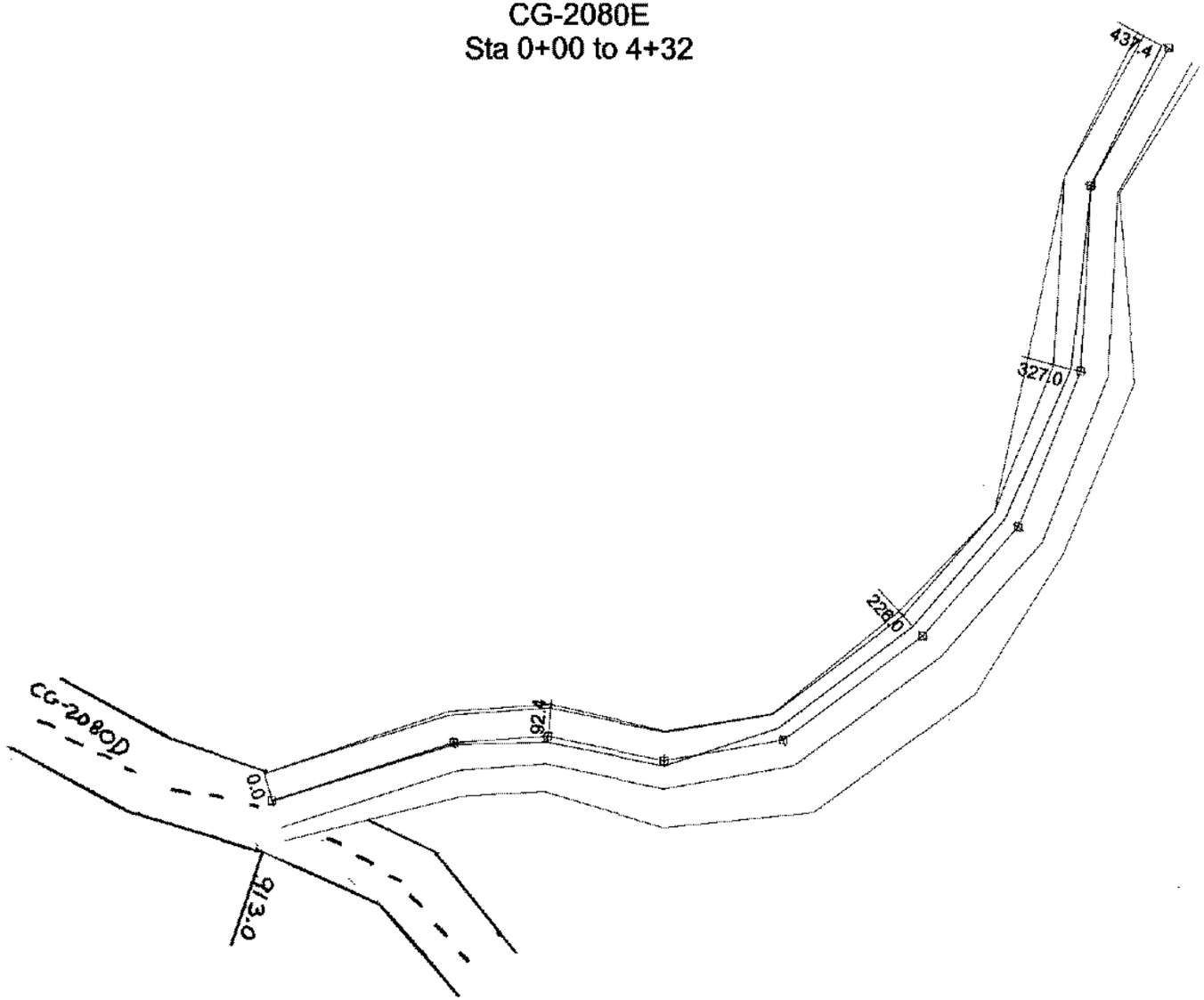
L-stn:	2097.2	Cut Dp:	2.9	Ssl:	-8
Grd.Nxt.	6	V.Offset:	-5.9	Ssr:	-35
Grd.Lst:	6	H. Offset:	8.4	CL Elev:	-65.4



L-stn:	2173.7	Cut Dp:	3.7	Ssl:	-12
Grd.Nxt.	n/a	V.Offset:	-3.8	Ssr:	-42
Grd.Lst:	-5	H. Offset:	-0.3	CL Elev:	-69.4

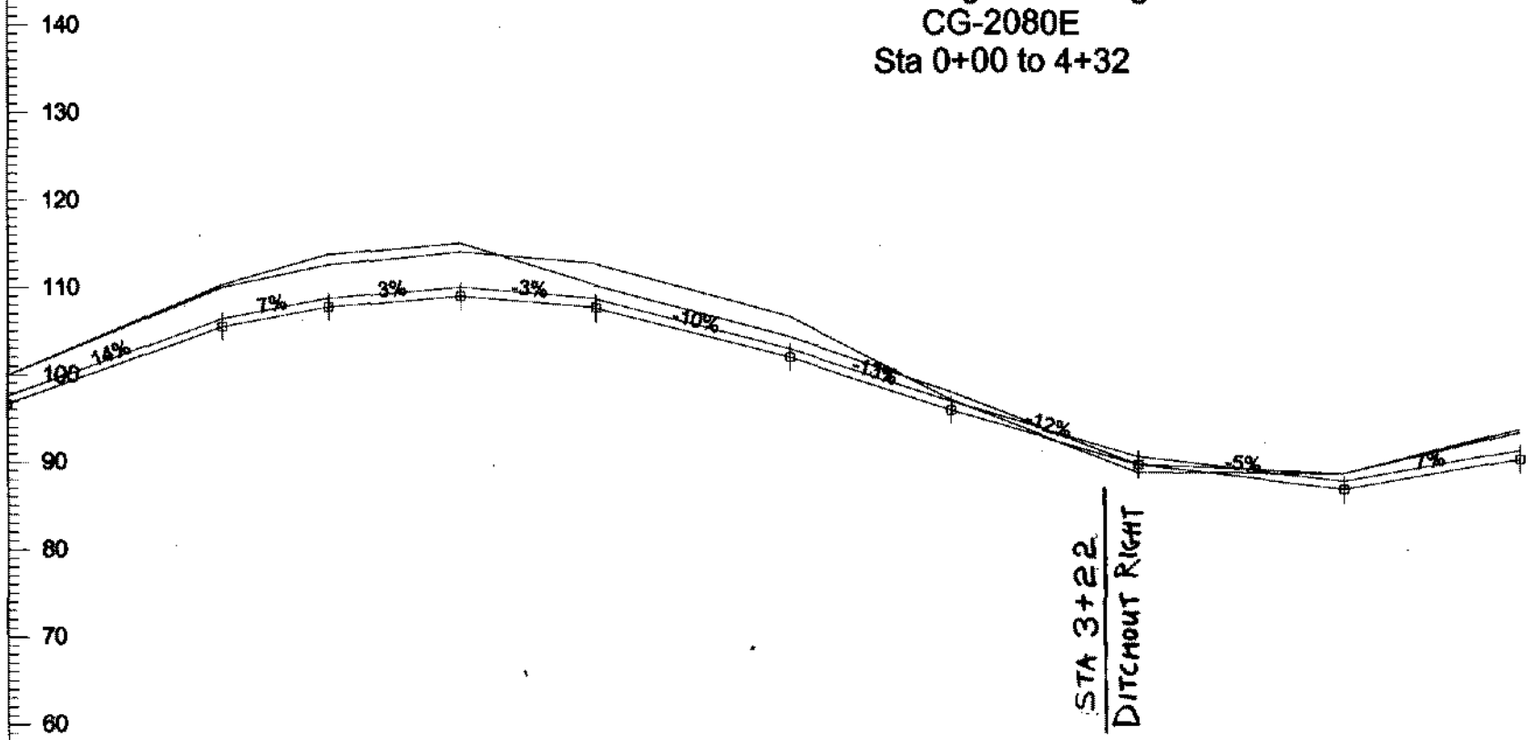
ROADENG Plan	Scale 1:600	P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080E		06/01/21

Little Tiger Thinning
CG-2080E
Sta 0+00 to 4+32



ROADENG Profile	Horz Scale 1:600	P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080E	Vert Scale 1:240	06/01/21

Little Tiger Thinning
CG-2080E
Sta 0+00 to 4+32



All volumes are in bank cubic yards and are estimates.

50 100 150 200 250 300 350 400 450 500 550 600 650 L-Stn

Cut/Fill

4.5 4.8 5.0 5.0 4.6 1.2 -0.9 1.9 3.0

Mass Haul (cu.yd.)

1000

END HAUL TO WASTE AREA ≈ 1450 c.y.

BALANCED

Ssl:	-55	-58	-60			-35	-25	-58	
Ssr:	-50	+45	+60	+53	+15	-28		-15	

ROADENG Data

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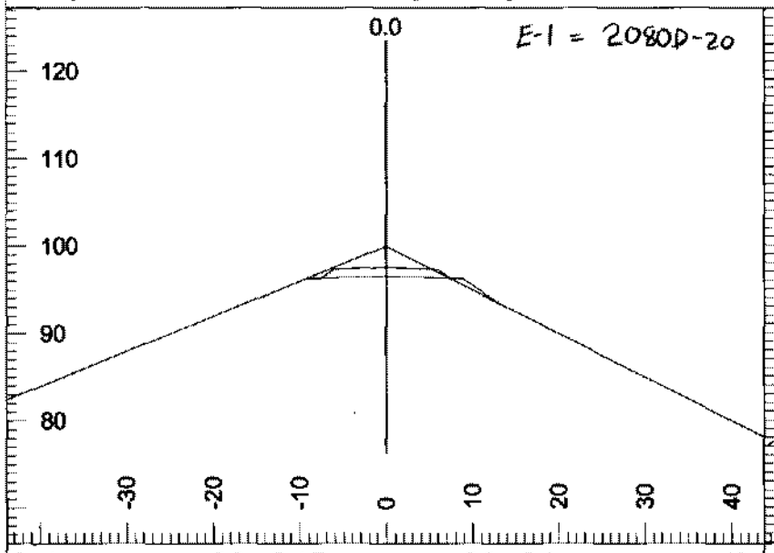
06/01/21

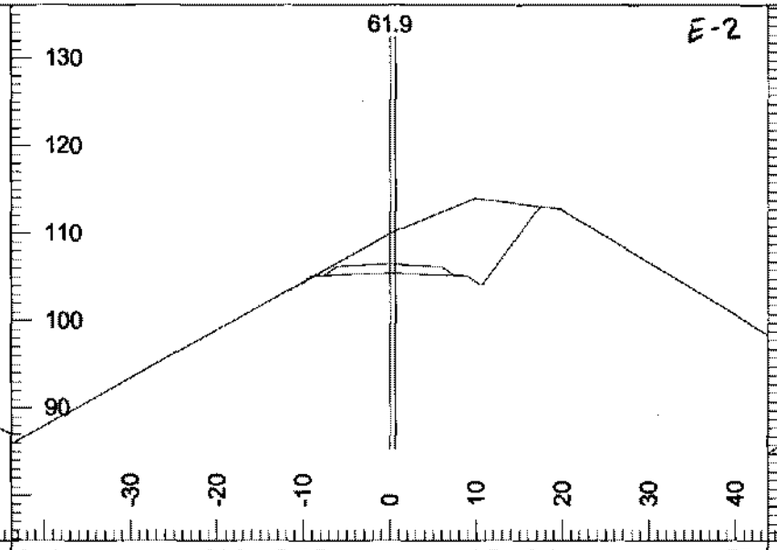
L-Stn ft.	P-Stn ft.	Cut Dp. ft.	Grade %	V.Brk %	Mass H. cu.yd.	
0.0	0.0	3.3		0		0.0
61.8	61.8	4.5	14	-7	END HAUL	175.7
92.4	92.0	4.8	7	-4	TO W.A.	330.4
131.0	130.7	5.0	3	-7	~1450 c.y.	572.9
170.1	169.3	5.0	-3	-7		873.0
226.2	224.0	4.6	-10	-3		1298.4
273.1	269.6	1.2	-13	1		1465.7
327.2	322.5	-0.9	-12	7		1426.8
386.9	381.8	1.9	-5	12	Balanced	1397.9
437.7	432.3	3.0	7	0		1452.2

ROADENG Section | Scale 1:240 | P. 1

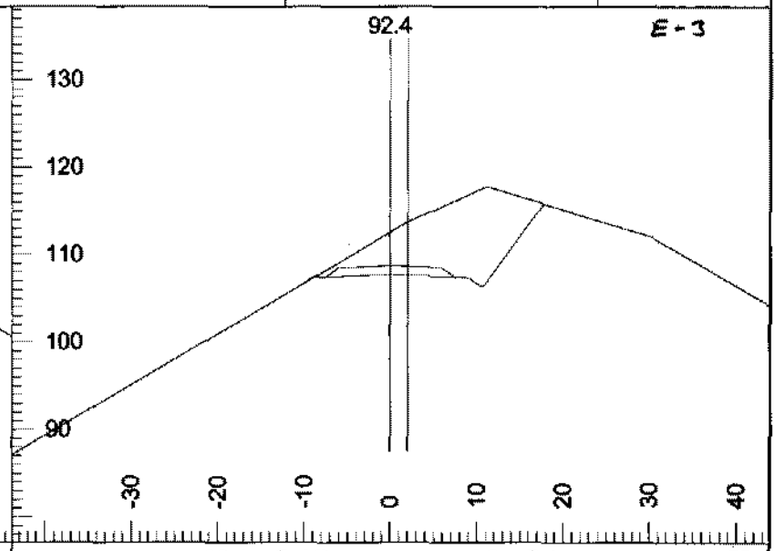
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2080E | 06/01/21



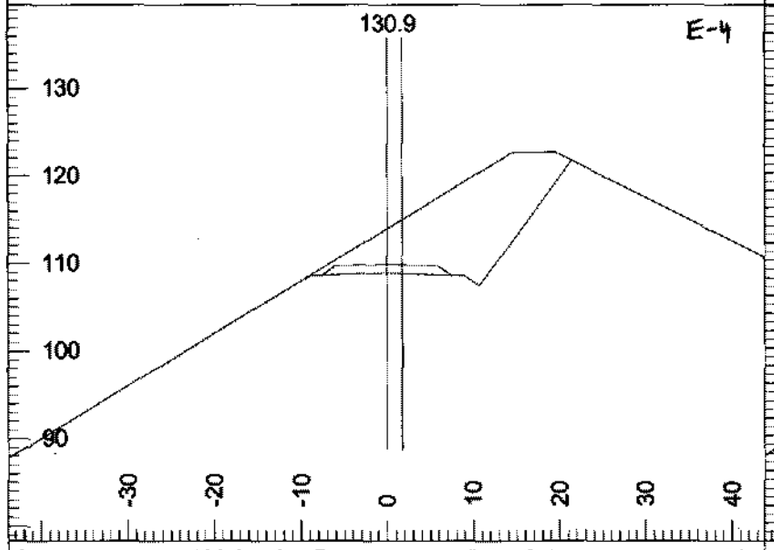
L-stn:	0.0	Cut Dp:	3.3	Ssl:	-40
Grd.Nxt.	14	V.Offset:	-3.4	Ssr:	-50
Grd.Lst:	n/a	H. Offset:	-0.1	CL Elev:	96.6



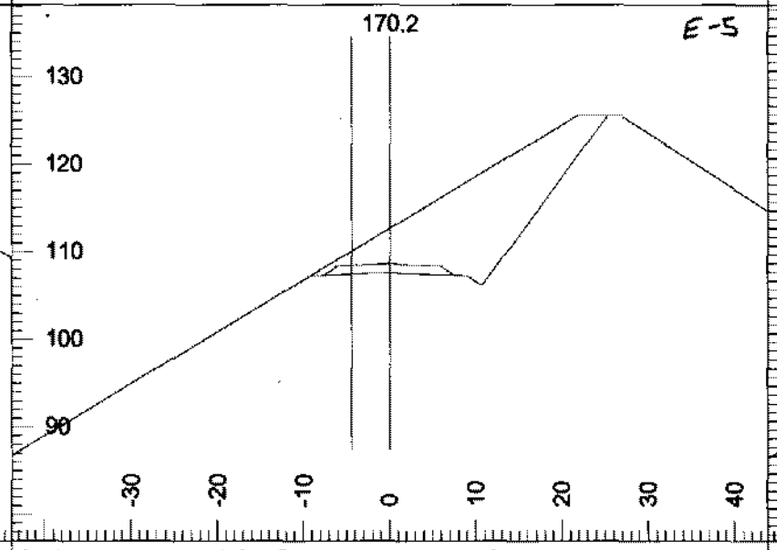
L-stn:	61.9	Cut Dp:	4.5	Ssl:	-55
Grd.Nxt.	7	V.Offset:	-4.8	Ssr:	40
Grd.Lst:	7	H. Offset:	-0.6	CL Elev:	105.5



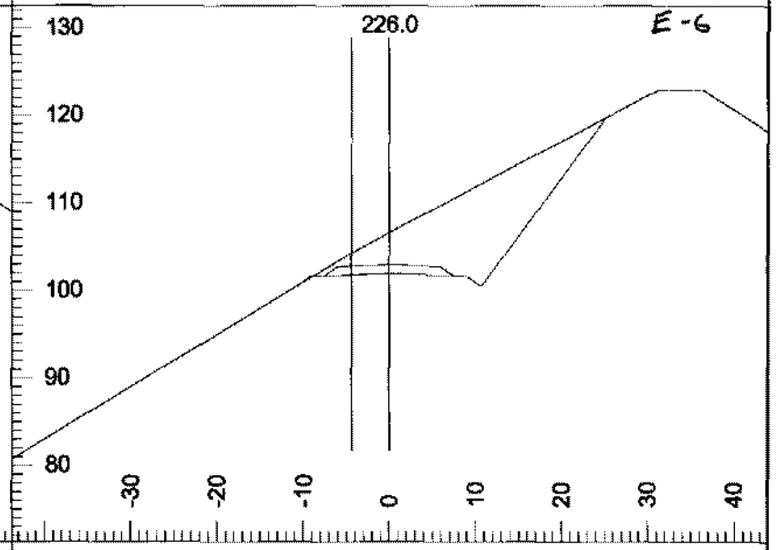
L-stn:	92.4	Cut Dp:	4.8	Ssl:	-58
Grd.Nxt.	7	V.Offset:	-6.0	Ssr:	45
Grd.Lst:	7	H. Offset:	-2.1	CL Elev:	107.7



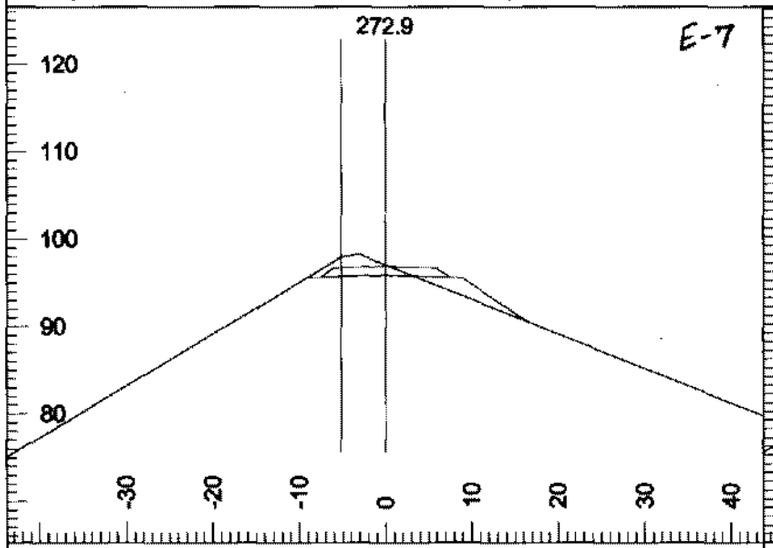
L-stn:	130.9	Cut Dp:	5.0	Ssl:	-60
Grd.Nxt.	3	V.Offset:	-6.1	Ssr:	60
Grd.Lst:	3	H. Offset:	-1.7	CL Elev:	109.0



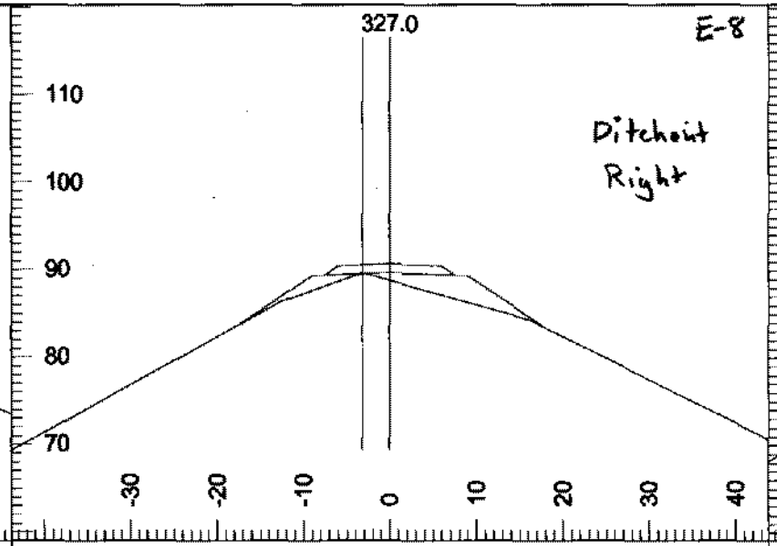
L-stn:	170.2	Cut Dp:	5.0	Ssl:	-60
Grd.Nxt.	-10	V.Offset:	-2.5	Ssr:	60
Grd.Lst:	-10	H. Offset:	4.2	CL Elev:	107.6



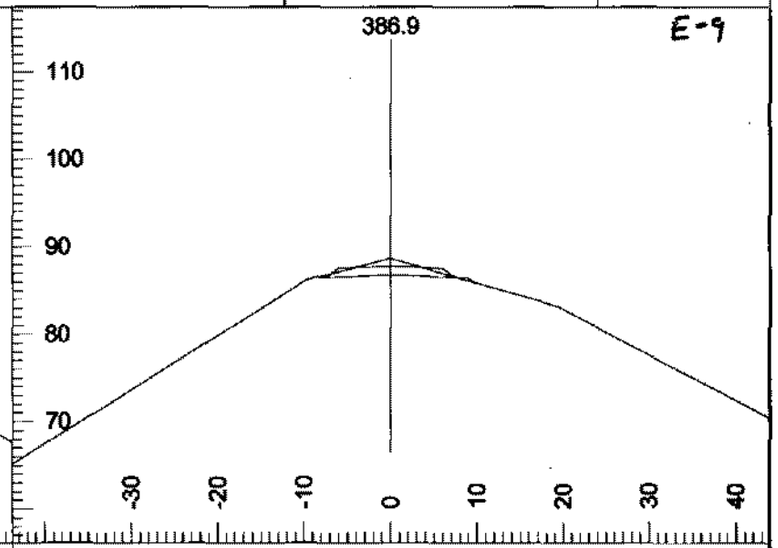
L-stn:	226.0	Cut Dp:	4.6	Ssl:	-60
Grd.Nxt.	-10	V.Offset:	-2.3	Ssr:	53
Grd.Lst:	-10	H. Offset:	4.3	CL Elev:	101.9



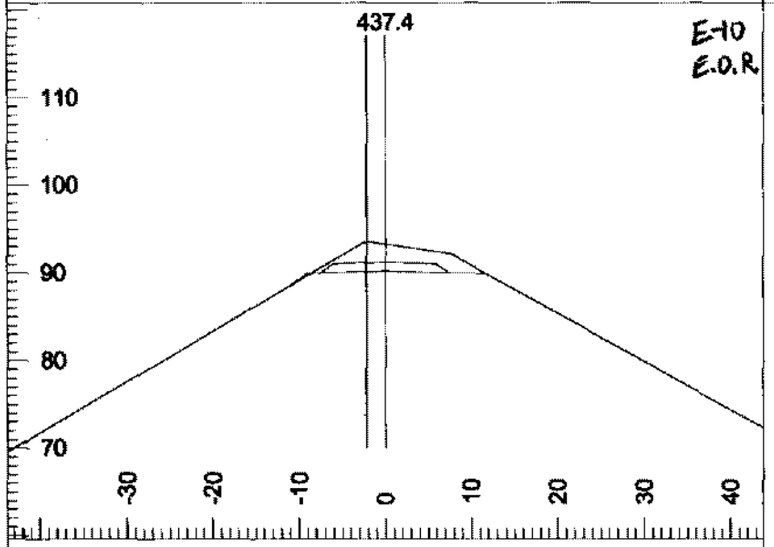
L-stn:	272.9	Cut Dp:	1.2	Ssl:	-60
Grd.Nxt.	-13	V.Offset:	-2.1	Ssr:	15
Grd.Lst:	-13	H. Offset:	5.0	CL Elev:	95.9



L-stn:	327.0	Cut Dp:	-0.9	Ssl:	-35
Grd.Nxt.	-12	V.Offset:	0.0	Ssr:	-28
Grd.Lst:	-12	H. Offset:	3.1	CL Elev:	89.6



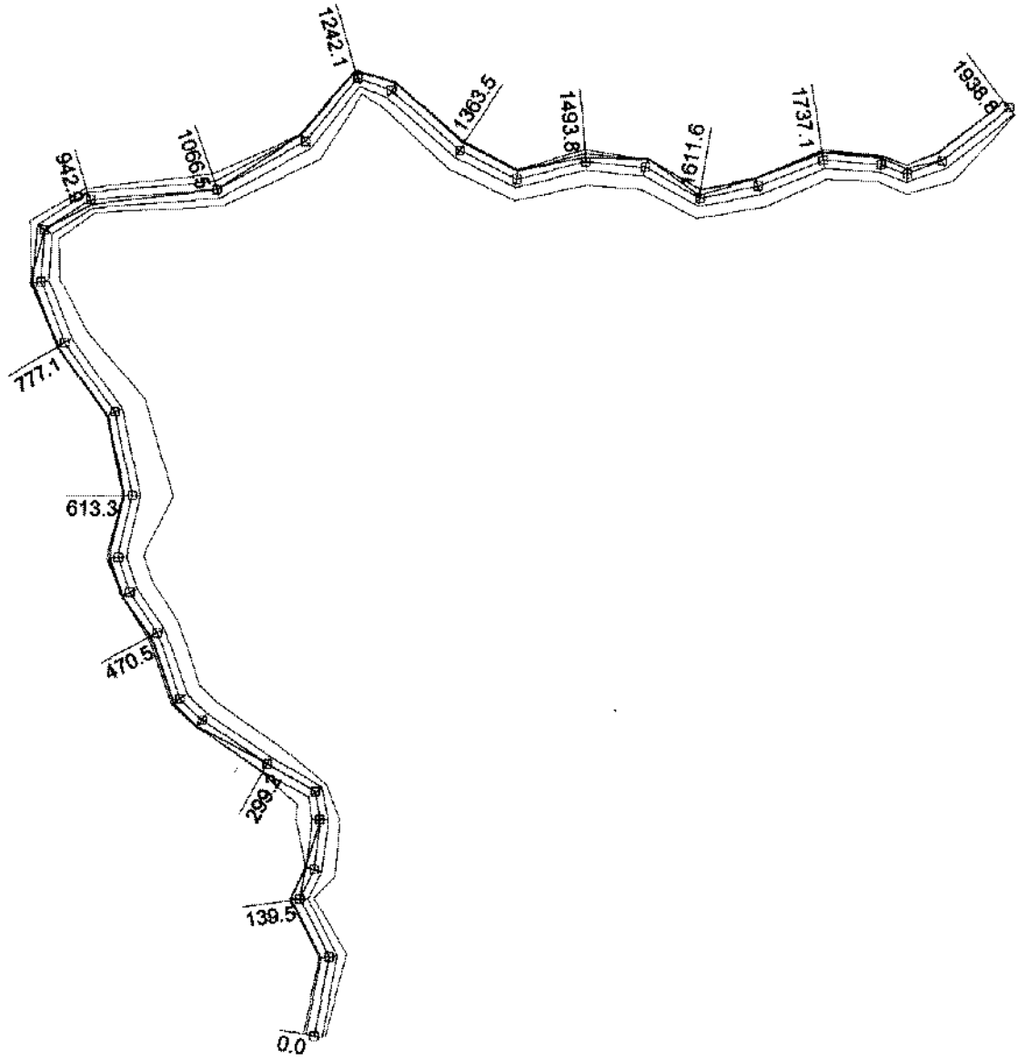
L-stn:	386.9	Cut Dp:	1.9	Ssl:	-25
Grd.Nxt.	7	V.Offset:	-1.9	Ssr:	-28
Grd.Lst:	-5	H. Offset:	0.0	CL Elev:	86.8



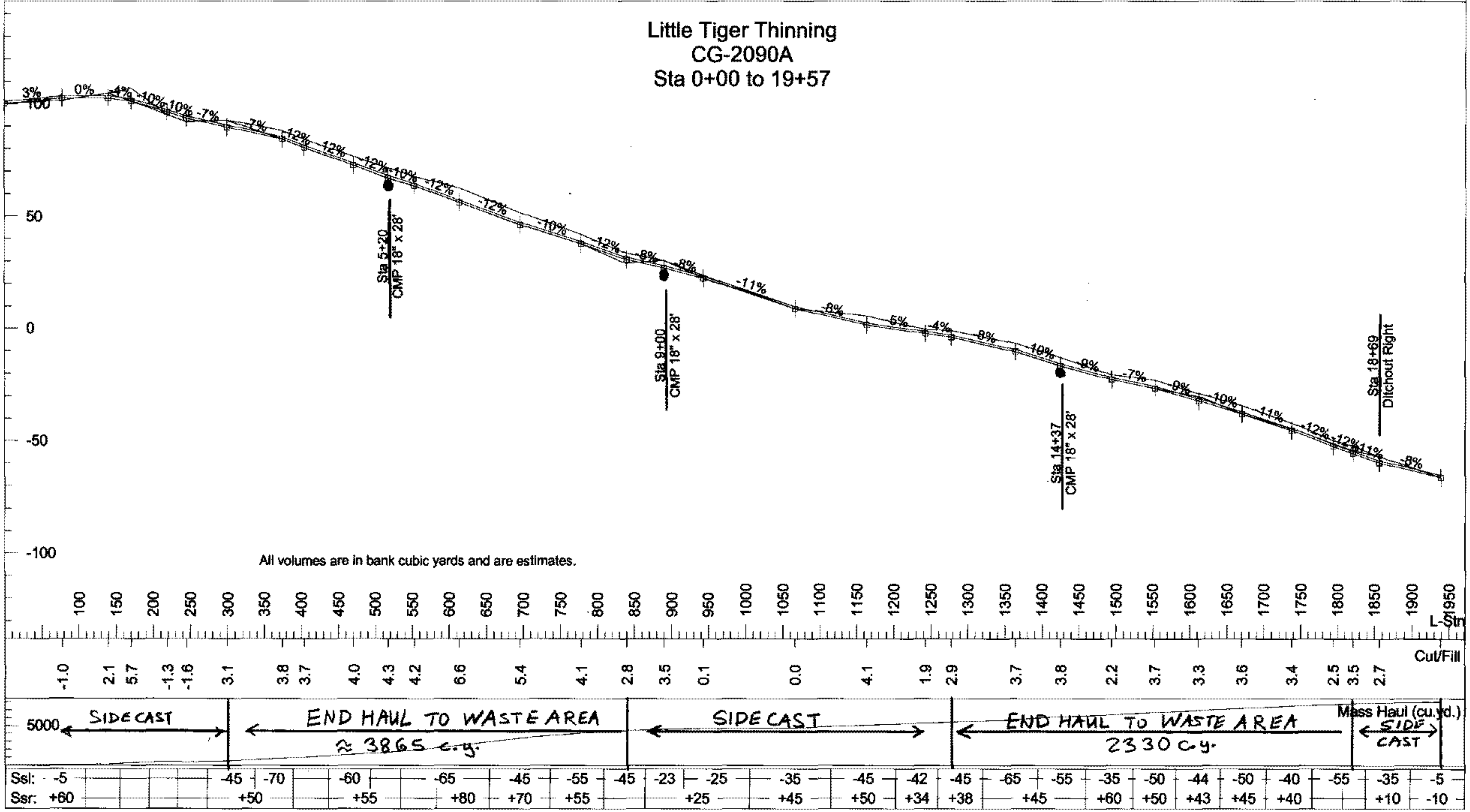
L-stn:	437.4	Cut Dp:	3.1	Ssl:	-58
Grd.Nxt.	7	V.Offset:	-3.4	Ssr:	-15
Grd.Lst:	7	H. Offset:	2.2	CL Elev:	90.3

ROADENG Plan	Scale 1:2000	P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2090A		06/01/21

Little Tiger Thinning
CG-2090A
Sta 0+00 to 19+57



ROADENG Profile	Horz Scale 1:1800	P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2090A	Vert Scale 1:600	06/01/21



ROADENG Data

D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2090A

06/01/21

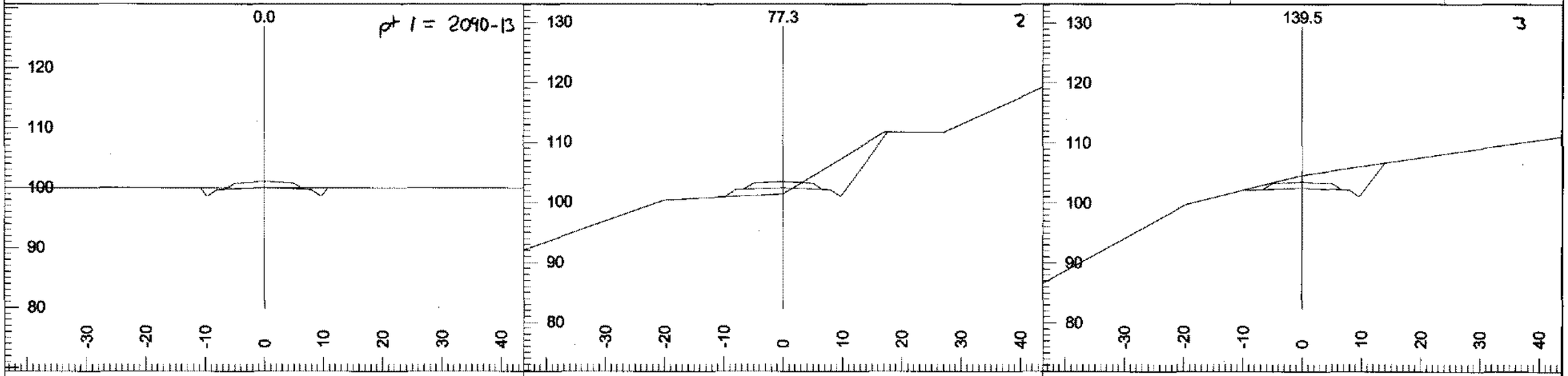
L-Stn ft.	P-Stn ft.	Cut Dp. ft.	Grade %	V.Brk %	Mass H. cu.yd.	
0.0	0.0	0.0	3	0		0.0
77.3	77.3	-1.0	0	-3		64.1
139.5	139.5	2.1	-4	-4		166.3
170.6	169.9	5.7	-10	-6	SIDECAST	301.0
219.0	218.1	-1.3	-10	0		462.3
245.4	244.4	-1.6	-7	3		441.4
299.2	298.2	3.1	-7	0		521.8 7
374.5	375.3	3.8	-12	-5		882.9
404.2	408.8	3.7	-12	1		1035.8
470.9	474.0	4.0	-12	0	END HAUL TO W.A.	1401.1
517.5	522.4	4.3	-10	2		1680.1
552.9	562.3	4.2	-12	-2		1900.6
613.9	621.0	6.6	-12	0	≈ 3865 cy.	2506.2
695.6	699.5	5.4	-10	2		3452.7
777.5	781.7	4.1	-12	-1		4088.1
839.8	851.0	2.8	-8	4		4386.7 16
890.0	900.3	3.5	-8	-1		4574.2
942.8	952.1	0.1	-11	-3		4689.1
1066.5	1074.8	0.0	-8	3	SIDECAST	4772.9
1163.3	1170.1	4.1	-5	3		5081.6
1242.6	1256.5	1.9	-4	0		5388.2
1277.3	1294.6	2.9	-8	-3		5487.4
1363.9	1379.8	3.7	-10	-3		5845.0
1425.2	1437.3	3.8	-9	2	END HAUL TO W.A. ≈ 2330 cy	6138.9
1494.1	1504.6	2.2	-7	2		6447.1
1552.6	1567.8	3.7	-9	-3		6713.1
1611.8	1625.4	3.3	-10	0		6982.0
1670.3	1682.1	3.6	-11	-1		7238.6
1737.5	1752.1	3.4	-12	-1		7532.3
1794.0	1810.2	2.5	-12	1		7723.0
1821.3	1835.5	3.5	-11	0		7815.8
1856.6	1869.5	2.7	-8	3		7935.8
1938.8	1951.7	0.0		0	SIDECAST	8040.6

4387
- 522
3865

7815
5487
2328

ROADENG Section | Scale 1:240 | P. 1

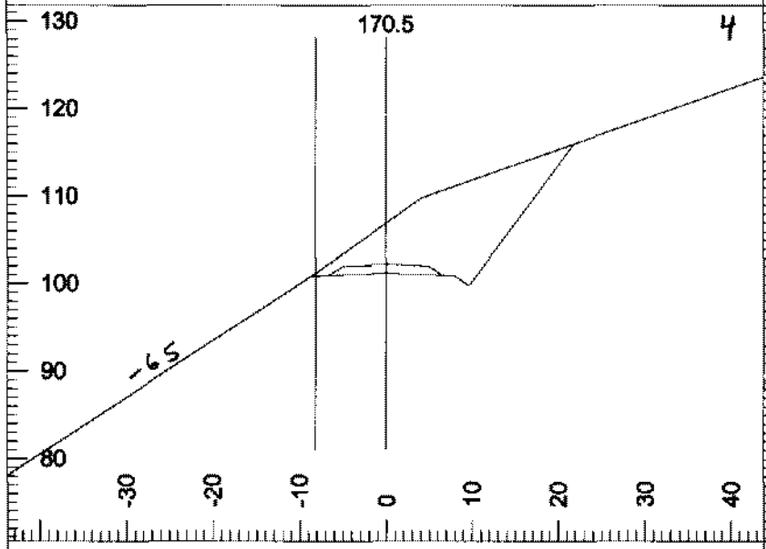
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2090A | 06/01/21



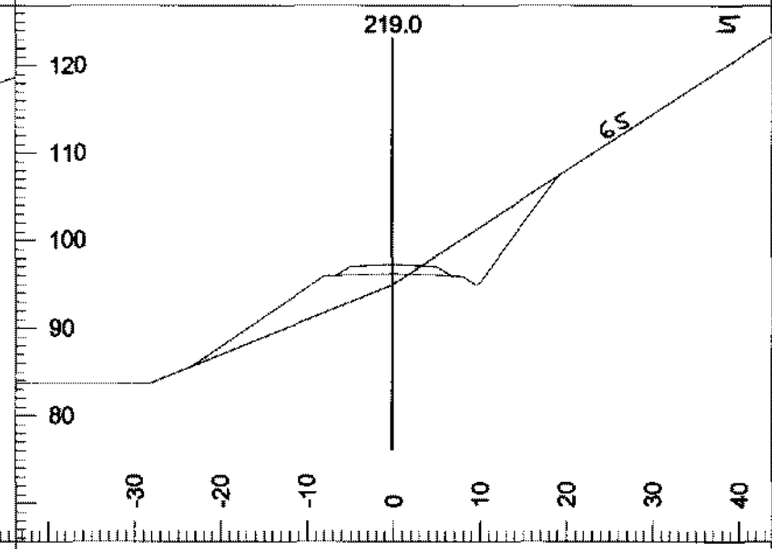
L-stn:	0.0	Cut Dp:	0.0	Ssl:	0
Grd.Nxt.	3	V.Offset:	0.0	Ssr:	0
Grd.Lst:	n/a	H. Offset:	0.0	CL Elev:	100.0

L-stn:	77.3	Cut Dp:	-1.0	Ssl:	-5
Grd.Nxt.	0	V.Offset:	1.0	Ssr:	60
Grd.Lst:	3	H. Offset:	0.0	CL Elev:	102.4

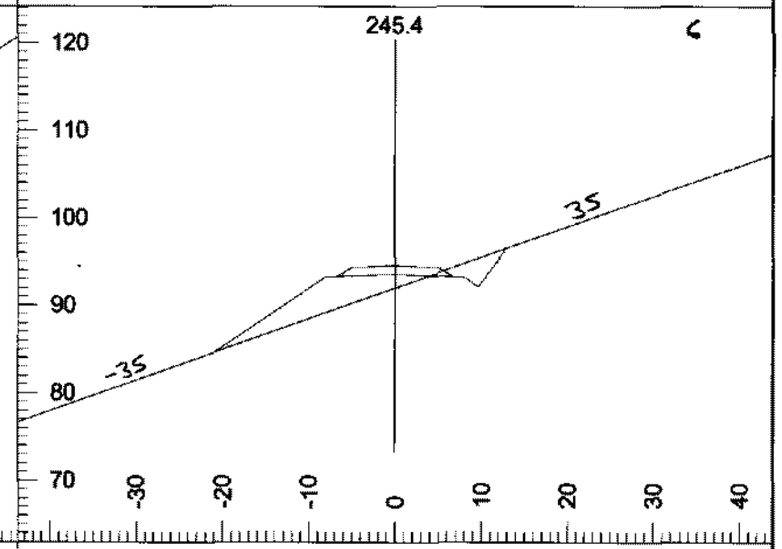
L-stn:	139.5	Cut Dp:	2.1	Ssl:	-25
Grd.Nxt.	-4	V.Offset:	-2.1	Ssr:	15
Grd.Lst:	0	H. Offset:	0.0	CL Elev:	102.5



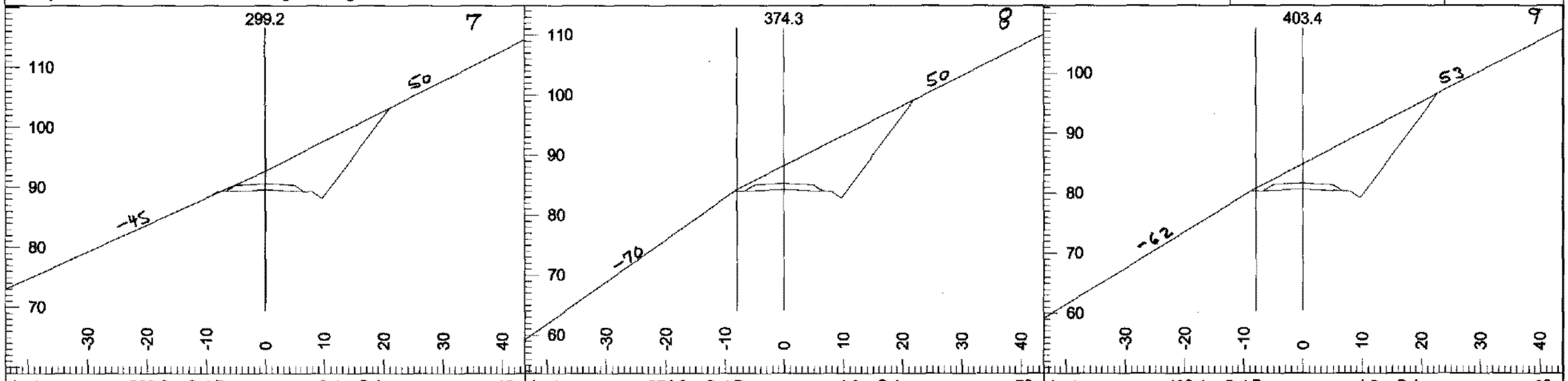
L-stn:	170.5	Cut Dp:	5.7	Ssl:	-65
Grd.Nxt.	-4	V.Offset:	0.0	Ssr:	70
Grd.Lst:	-4	H. Offset:	8.1	CL Elev:	101.2



L-stn:	219.0	Cut Dp:	-1.3	Ssl:	-40
Grd.Nxt.	-10	V.Offset:	1.4	Ssr:	65
Grd.Lst:	-10	H. Offset:	0.2	CL Elev:	96.2



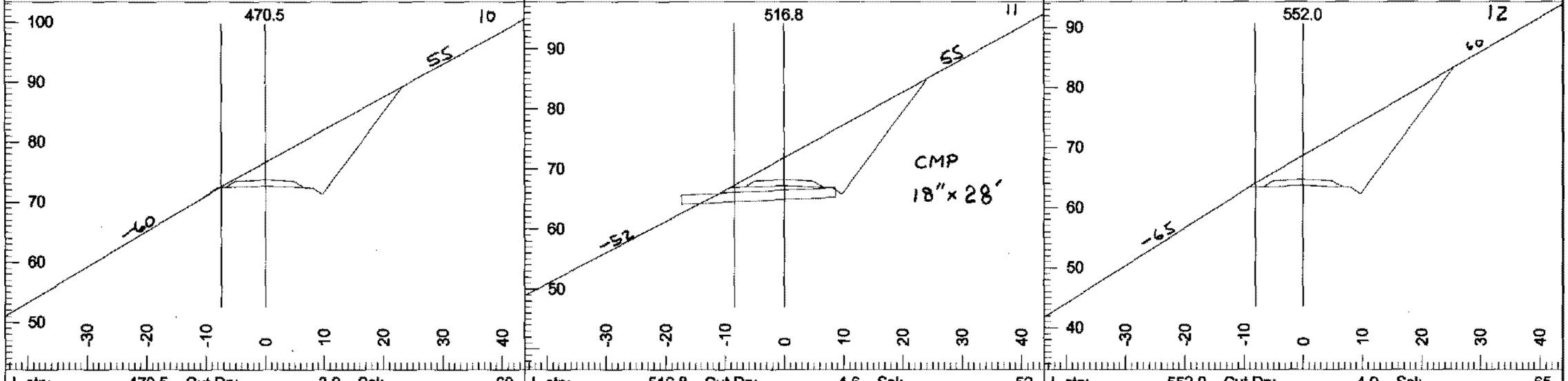
L-stn:	245.4	Cut Dp:	-1.6	Ssl:	-35
Grd.Nxt.	-7	V.Offset:	1.6	Ssr:	35
Grd.Lst:	-10	H. Offset:	0.0	CL Elev:	93.6



L-stn:	299.2	Cut Dp:	3.1	Ssl:	-45
Grd.Nxt.	-7	V.Offset:	-3.0	Ssr:	50
Grd.Lst:	-7	H. Offset:	0.1	CL Elev:	89.6

L-stn:	374.3	Cut Dp:	4.0	Ssl:	-70
Grd.Nxt.	-7	V.Offset:	0.0	Ssr:	50
Grd.Lst:	-7	H. Offset:	8.0	CL Elev:	84.3

L-stn:	403.4	Cut Dp:	4.2	Ssl:	-62
Grd.Nxt.	-12	V.Offset:	0.1	Ssr:	53
Grd.Lst:	-12	H. Offset:	8.1	CL Elev:	80.7

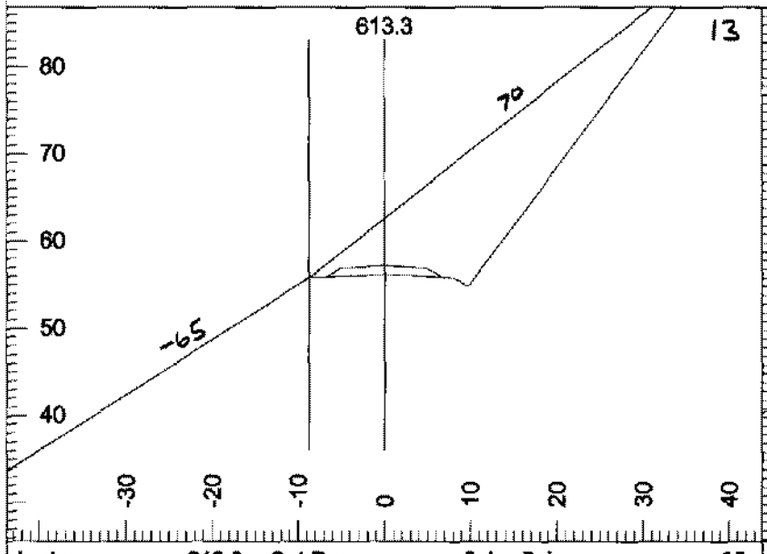


L-stn:	470.5	Cut Dp:	3.9	Ssl:	-60
Grd.Nxt.	-12	V.Offset:	0.0	Ssr:	55
Grd.Lst:	-12	H. Offset:	7.2	CL Elev:	72.7

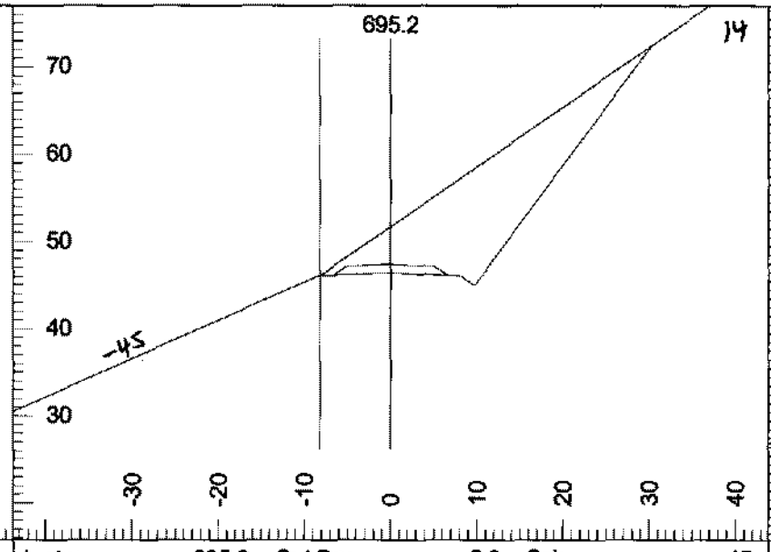
L-stn:	516.8	Cut Dp:	4.6	Ssl:	-52
Grd.Nxt.	-12	V.Offset:	0.1	Ssr:	55
Grd.Lst:	-12	H. Offset:	8.5	CL Elev:	67.2

L-stn:	552.0	Cut Dp:	4.9	Ssl:	-65
Grd.Nxt.	-10	V.Offset:	0.1	Ssr:	60
Grd.Lst:	-10	H. Offset:	8.4	CL Elev:	63.7

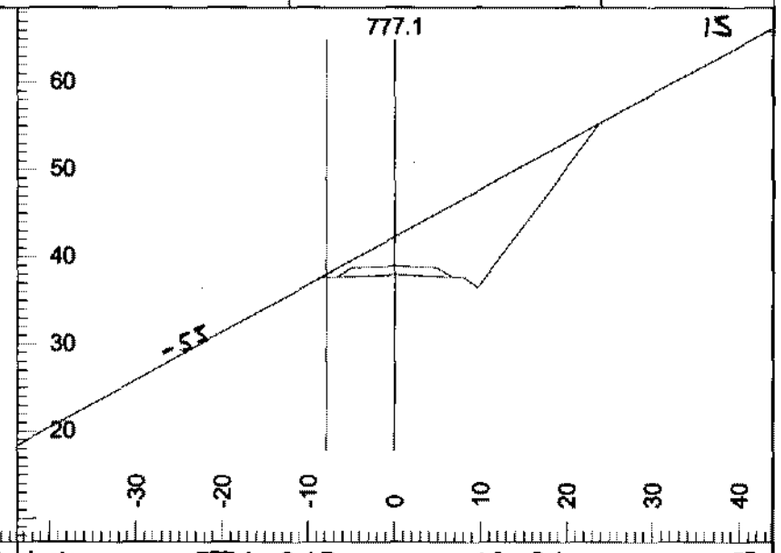
ROADENG Section			Scale 1:240	P. 3
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2090A				06/01/21



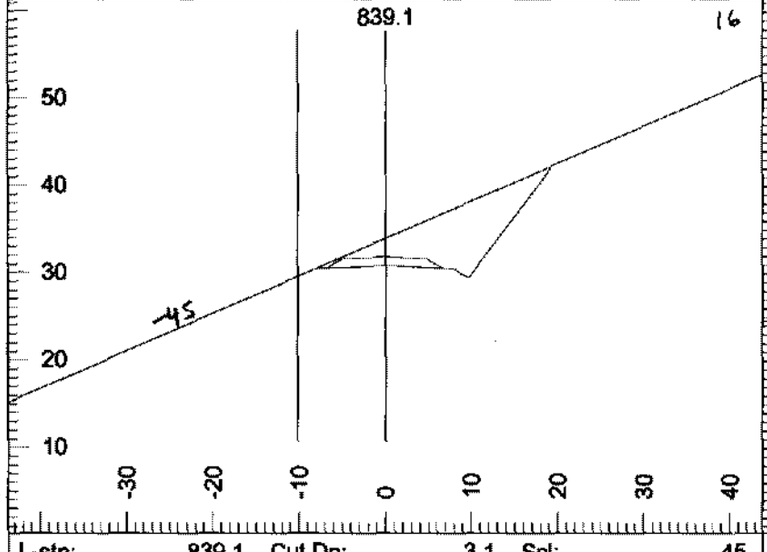
L-stn:	613.3	Cut Dp:	6.4	Ssl:	-65
Grd.Nxt.	-12	V.Offset:	0.1	Ssr:	80
Grd.Lst:	-12	H. Offset:	8.1	CL Elev:	56.2



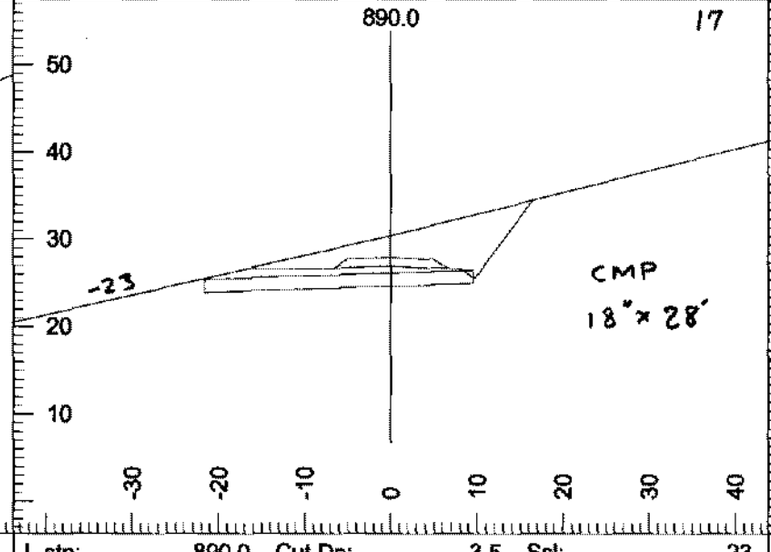
L-stn:	695.2	Cut Dp:	5.3	Ssl:	-45
Grd.Nxt.	-12	V.Offset:	0.0	Ssr:	70
Grd.Lst:	-12	H. Offset:	7.7	CL Elev:	46.4



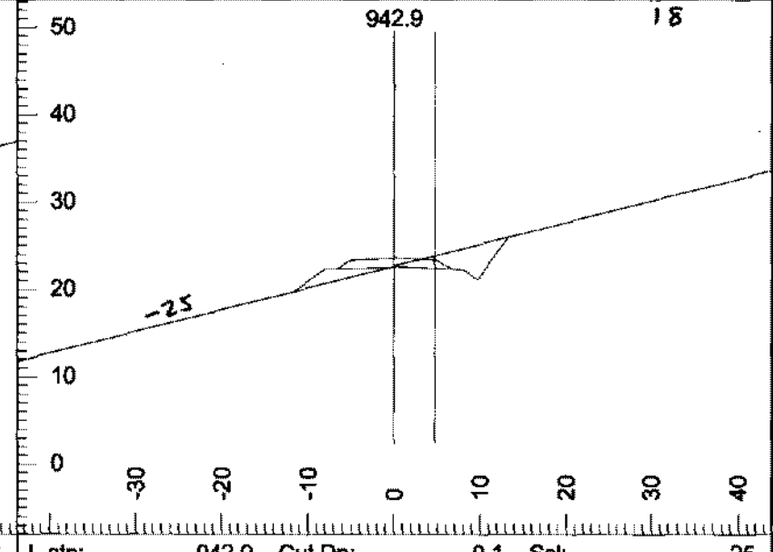
L-stn:	777.1	Cut Dp:	4.3	Ssl:	-55
Grd.Nxt.	-10	V.Offset:	0.0	Ssr:	55
Grd.Lst:	-10	H. Offset:	7.9	CL Elev:	37.9



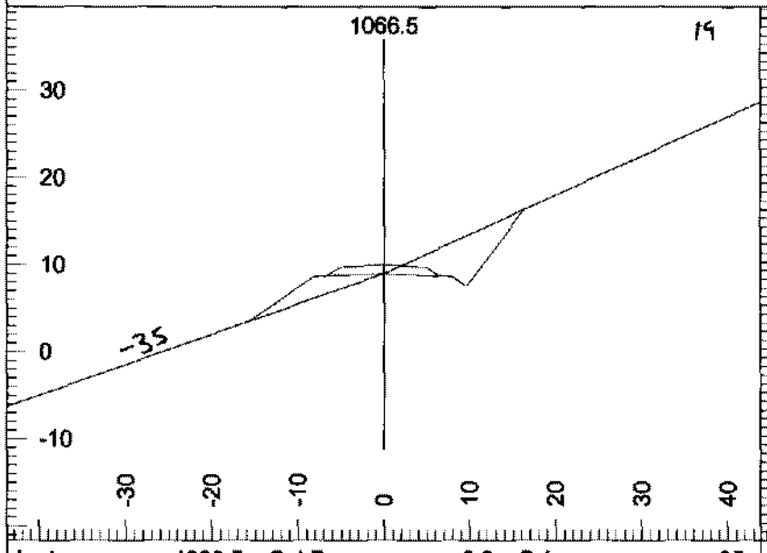
L-stn:	839.1	Cut Dp:	3.1	Ssl:	-45
Grd.Nxt.	-12	V.Offset:	1.7	Ssr:	45
Grd.Lst:	-12	H. Offset:	10.8	CL Elev:	30.8



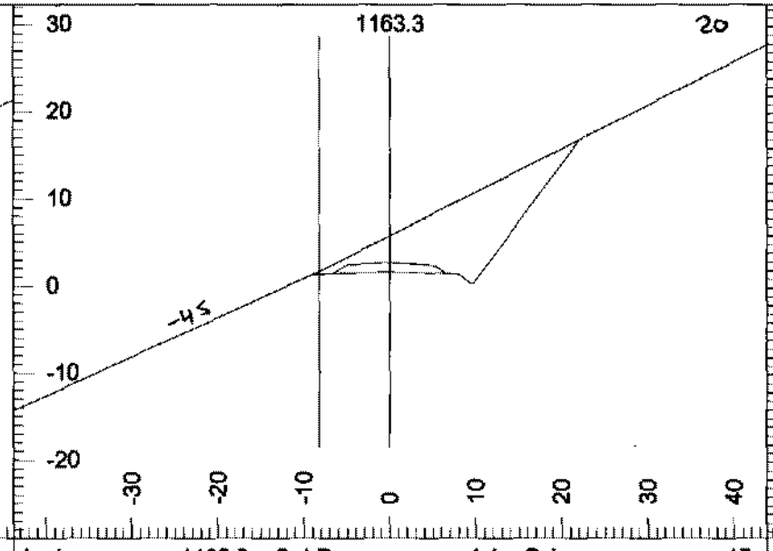
L-stn:	890.0	Cut Dp:	3.5	Ssl:	-23
Grd.Nxt.	-8	V.Offset:	-3.5	Ssr:	25
Grd.Lst:	-8	H. Offset:	0.0	CL Elev:	27.0



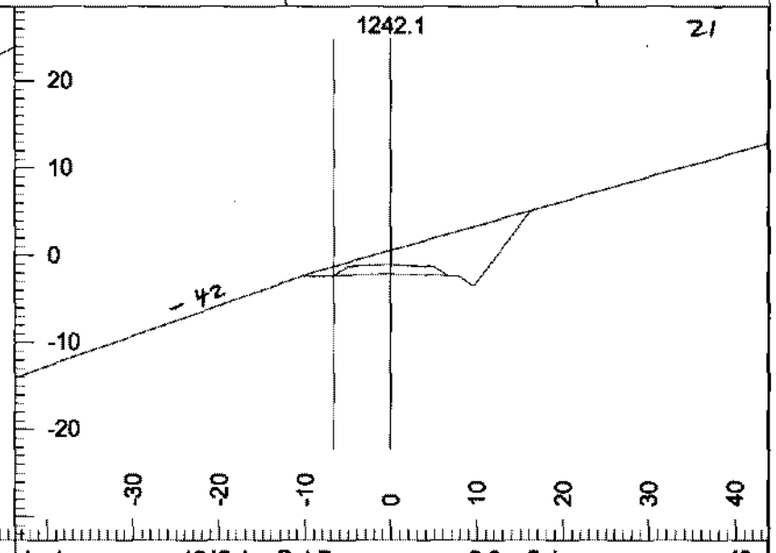
L-stn:	942.9	Cut Dp:	0.1	Ssl:	-25
Grd.Nxt.	-11	V.Offset:	-1.3	Ssr:	25
Grd.Lst:	-11	H. Offset:	-4.7	CL Elev:	22.6



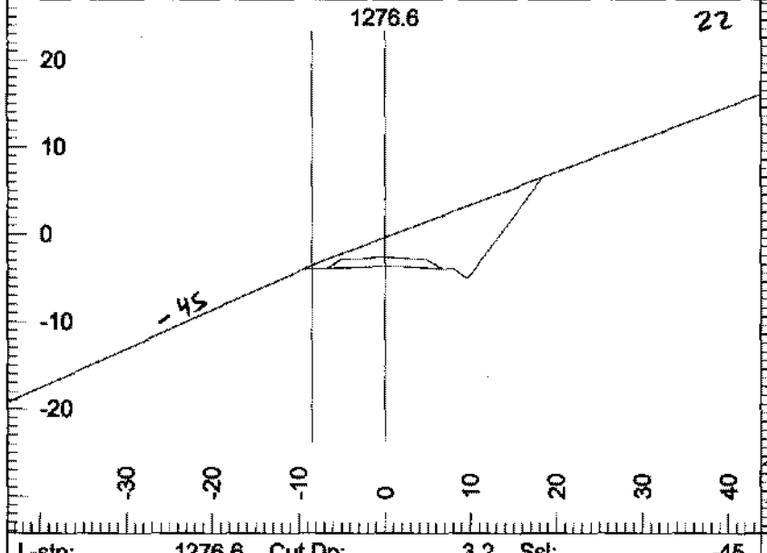
L-stn:	1066.5	Cut Dp:	0.0	Ssl:	-35
Grd.Nxt.	-8	V.Offset:	0.0	Ssr:	45
Grd.Lst:	-11	H. Offset:	0.0	CL Elev:	9.0



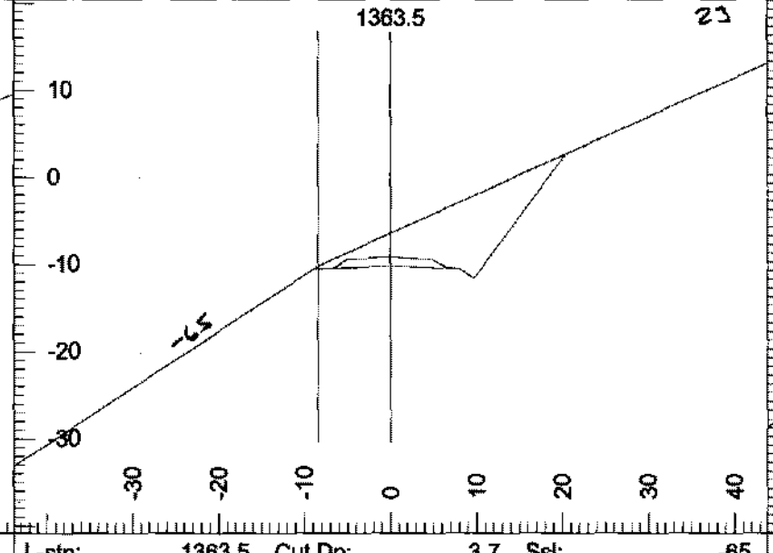
L-stn:	1163.3	Cut Dp:	4.1	Ssl:	-45
Grd.Nxt.	-8	V.Offset:	0.0	Ssr:	50
Grd.Lst:	-8	H. Offset:	8.2	CL Elev:	1.6



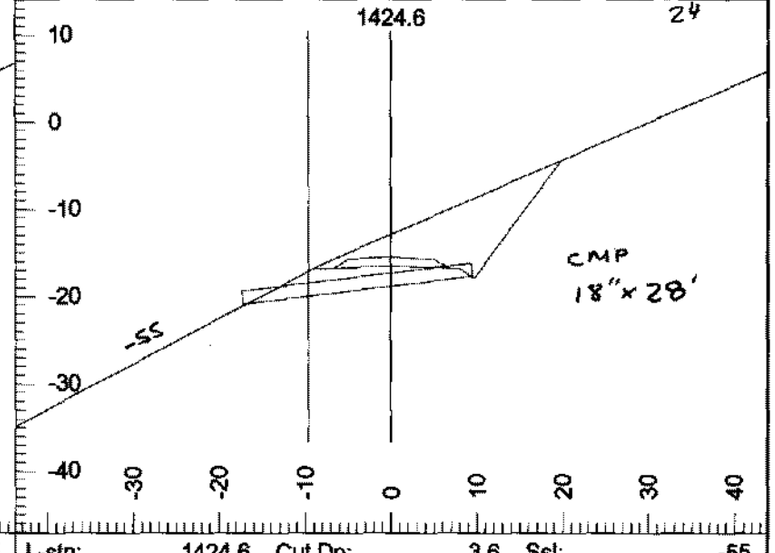
L-stn:	1242.1	Cut Dp:	2.6	Ssl:	-42
Grd.Nxt.	-5	V.Offset:	0.0	Ssr:	34
Grd.Lst:	-5	H. Offset:	7.9	CL Elev:	-2.1



L-stn:	1276.6	Cut Dp:	3.2	Ssl:	-45
Grd.Nxt.	-4	V.Offset:	0.0	Ssr:	38
Grd.Lst:	-4	H. Offset:	8.6	CL Elev:	-3.6



L-stn:	1363.5	Cut Dp:	3.7	Ssl:	-65
Grd.Nxt.	-8	V.Offset:	0.0	Ssr:	45
Grd.Lst:	-8	H. Offset:	8.2	CL Elev:	-10.2



L-stn:	1424.6	Cut Dp:	3.6	Ssl:	-55
Grd.Nxt.	-10	V.Offset:	0.1	Ssr:	45
Grd.Lst:	-10	H. Offset:	8.2	CL Elev:	-16.5

ROADENG Section | Scale 1:240 | P. 5

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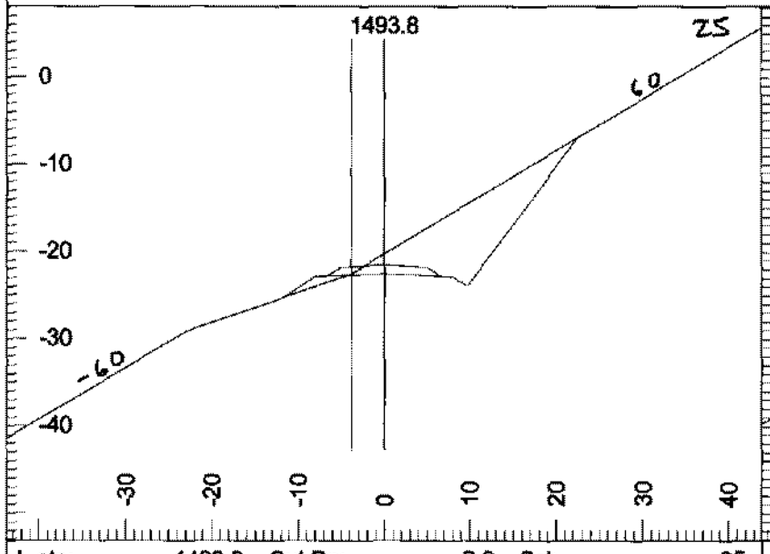
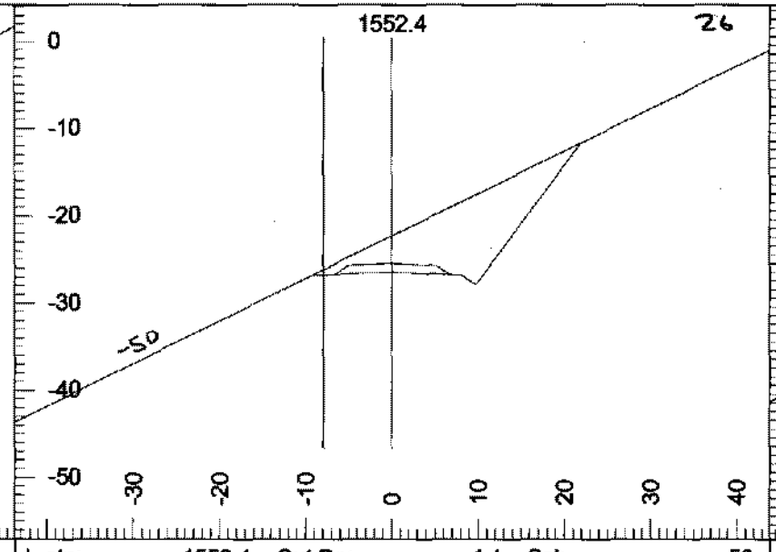
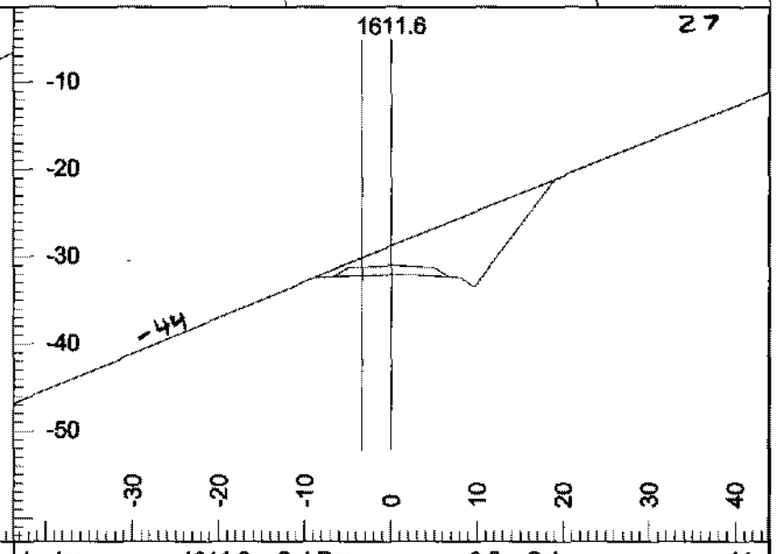


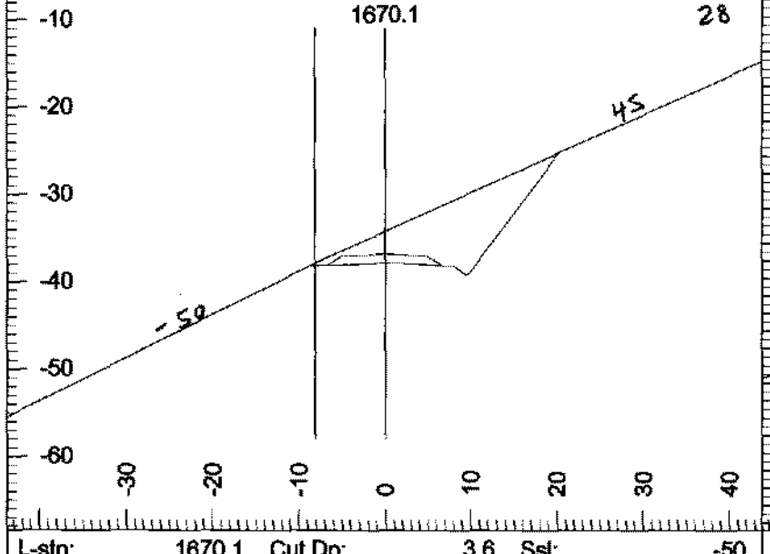
L-stn:	1493.8	Cut Dp:	2.2	Ssl:	-35
Grd.Nxt.	-9	V.Offset:	0.0	Ssr:	60
Grd.Lst:	-9	H. Offset:	3.8	CL Elev:	-22.5



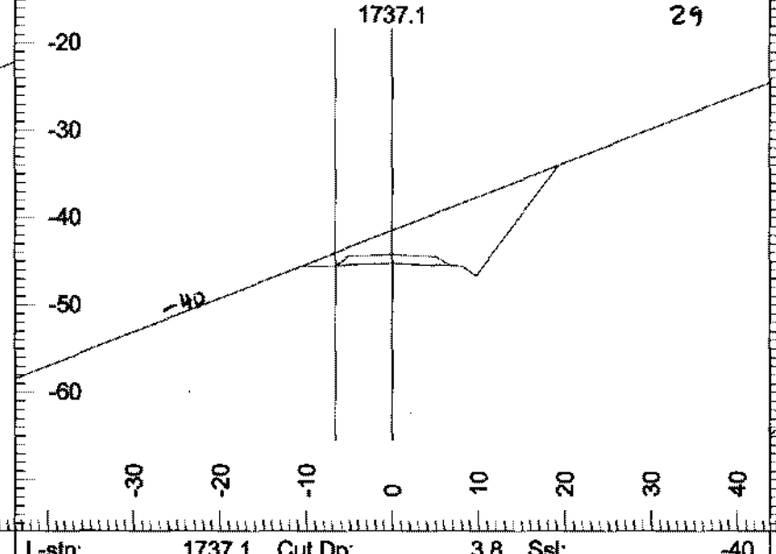
L-stn:	1552.4	Cut Dp:	4.1	Ssl:	-50
Grd.Nxt.	-7	V.Offset:	0.0	Ssr:	50
Grd.Lst:	-7	H. Offset:	8.3	CL Elev:	-26.5



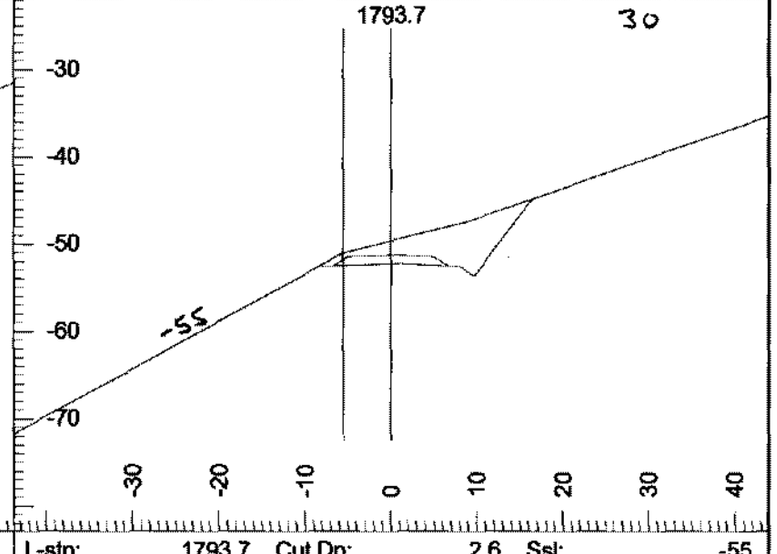
L-stn:	1611.6	Cut Dp:	3.2	Ssl:	-44
Grd.Nxt.	-9	V.Offset:	-2.1	Ssr:	43
Grd.Lst:	-9	H. Offset:	2.6	CL Elev:	-32.1



L-stn:	1670.1	Cut Dp:	3.6	Ssl:	-50
Grd.Nxt.	-10	V.Offset:	0.0	Ssr:	45
Grd.Lst:	-10	H. Offset:	8.0	CL Elev:	-37.8



L-stn:	1737.1	Cut Dp:	3.8	Ssl:	-40
Grd.Nxt.	-11	V.Offset:	-1.0	Ssr:	40
Grd.Lst:	-11	H. Offset:	6.8	CL Elev:	-45.2



L-stn:	1793.7	Cut Dp:	2.6	Ssl:	-55
Grd.Nxt.	-12	V.Offset:	-1.2	Ssr:	25
Grd.Lst:	-12	H. Offset:	5.5	CL Elev:	-52.2

ROADENG Section | Scale 1:240 | P. 6

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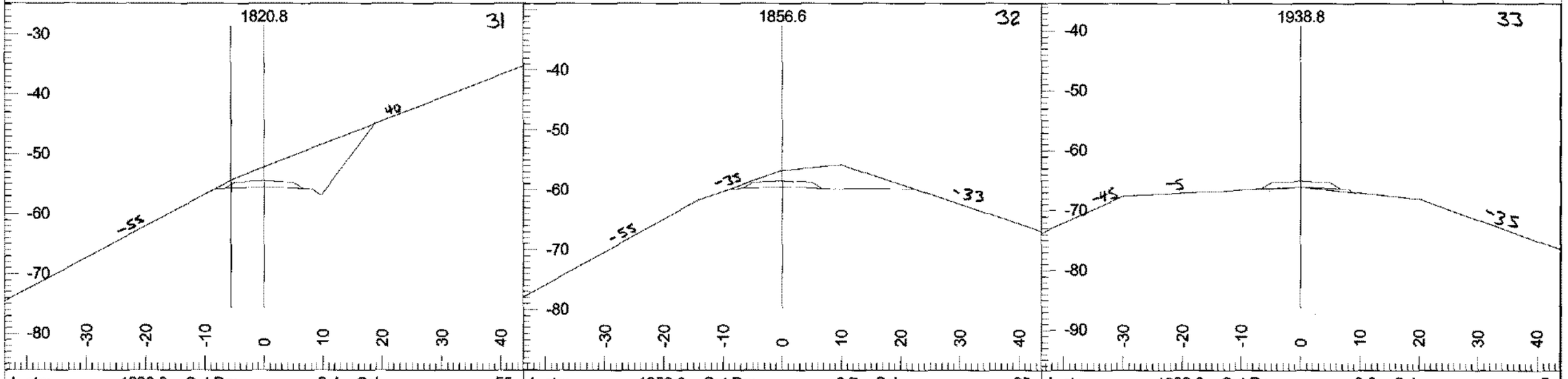
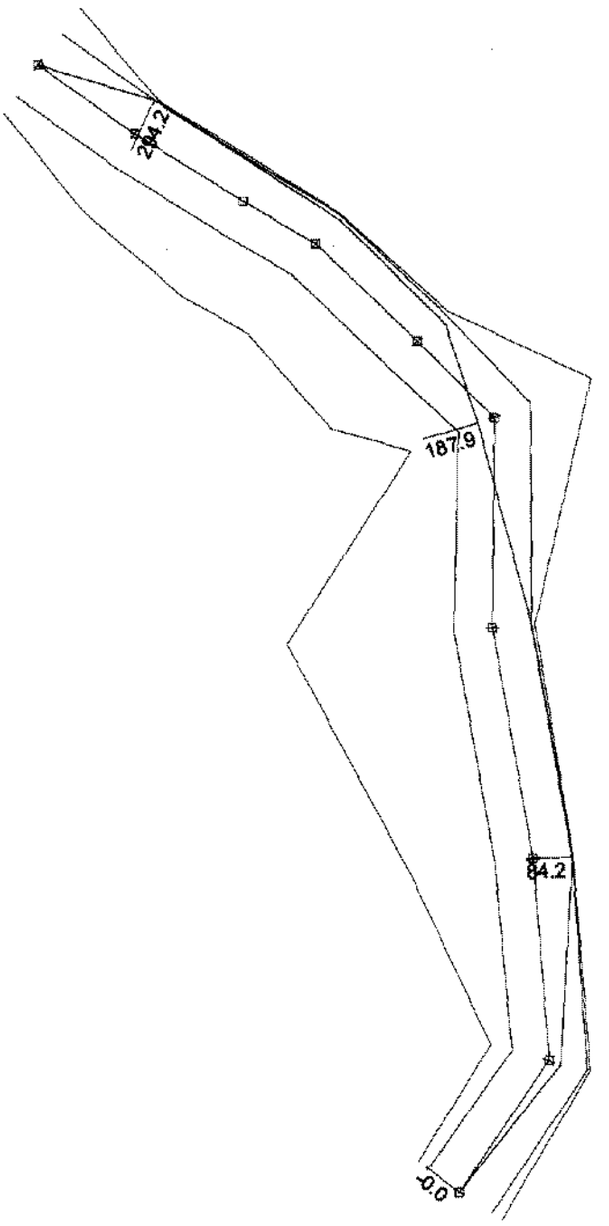


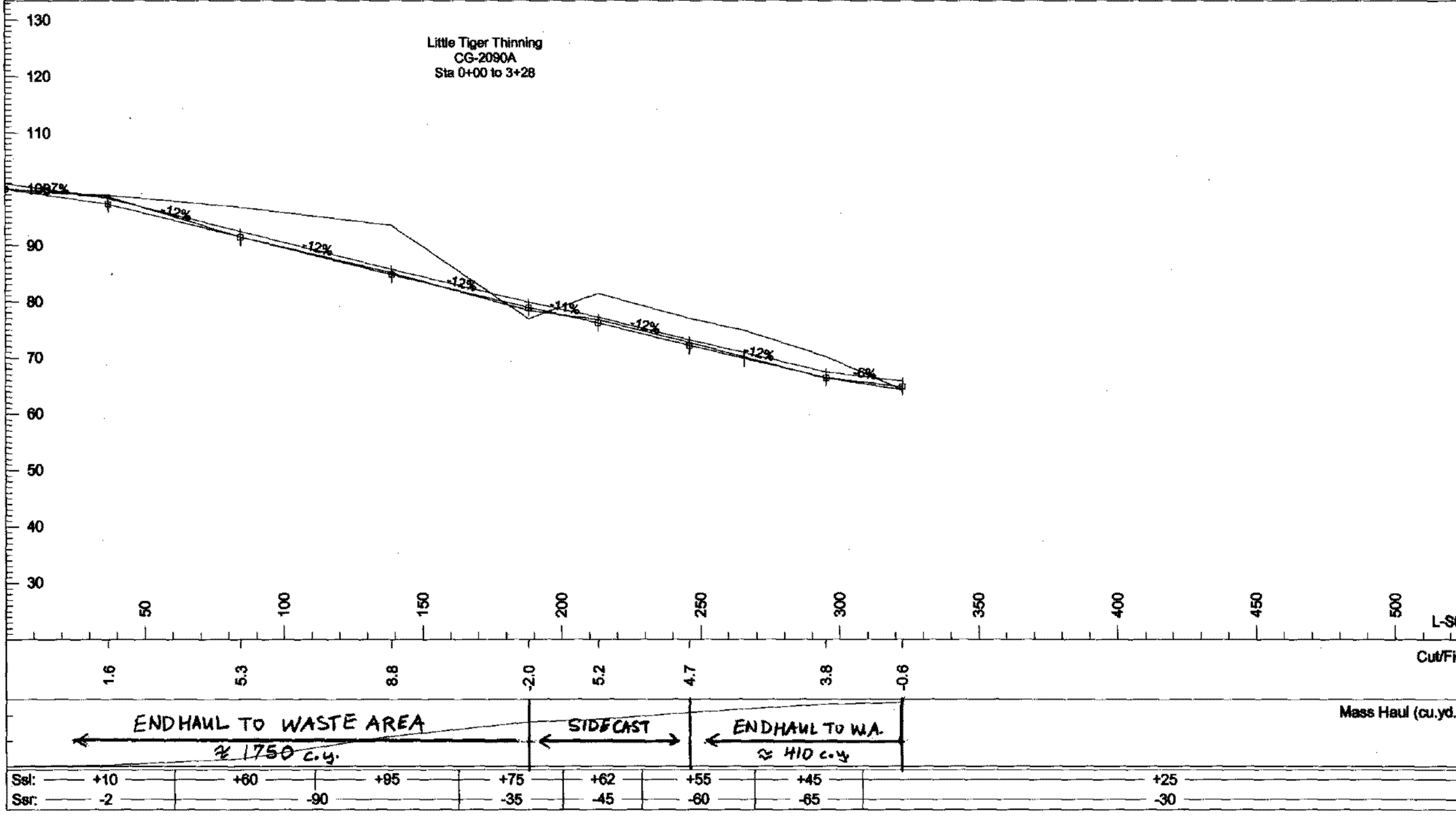
L-stn:	1820.8	Cut Dp:	3.4	Ssl:	-55	L-stn:	1856.6	Cut Dp:	2.7	Ssl:	-35	L-stn:	1938.8	Cut Dp:	0.0	Ssl:	-5
Grd.Nxt.	-12	V.Offset:	-1.4	Ssr:	40	Grd.Nxt.	-8	V.Offset:	-2.7	Ssr:	10	Grd.Nxt.	n/a	V.Offset:	0.0	Ssr:	-10
Grd.Lst:	-12	H. Offset:	5.0	CL Elev:	-55.4	Grd.Lst:	-11	H. Offset:	0.0	CL Elev:	-59.5	Grd.Lst:	-8	H. Offset:	0.0	CL Elev:	-66.1

ROADENG Plan	Scale 1:480	P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2090B		06/01/21

Little Tiger Thinning
CG-2090B
Sta 0+00 to 3+28



ROADENG Profile	Horz Scale 1:480	P. 1
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2090B	Vert Scale 1:240	06/01/21



ROADENG Data | P. 1

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L-Stn ft.	P-Stn ft.	Cut Dp. ft.	Grade %	V.Brk %	Mass H. cu.yd.
0.0	0.0	0.0		0	ENDHAUL 0.0
37.1	37.8	1.6	-7	-5	36.4
84.5	87.7	5.3	-12	0	1750 cy 283.2
139.0	142.9	8.8	-12	0	1182.0
188.1	190.1	-2.0	-12	1	1753.4
213.3	214.3	5.2	-11	-1	1850.2
246.0	250.5	4.7	-12	0	SIDECAST 2113.4
295.0	302.0	3.8	-12	6	2452.4
322.5	328.0	-0.6	-6	0	ENDHAUL 2519.1
				2519	To W.A.
				2113	
				406	410 cy

ROADENG Section | Scale 1:240 | P. 1

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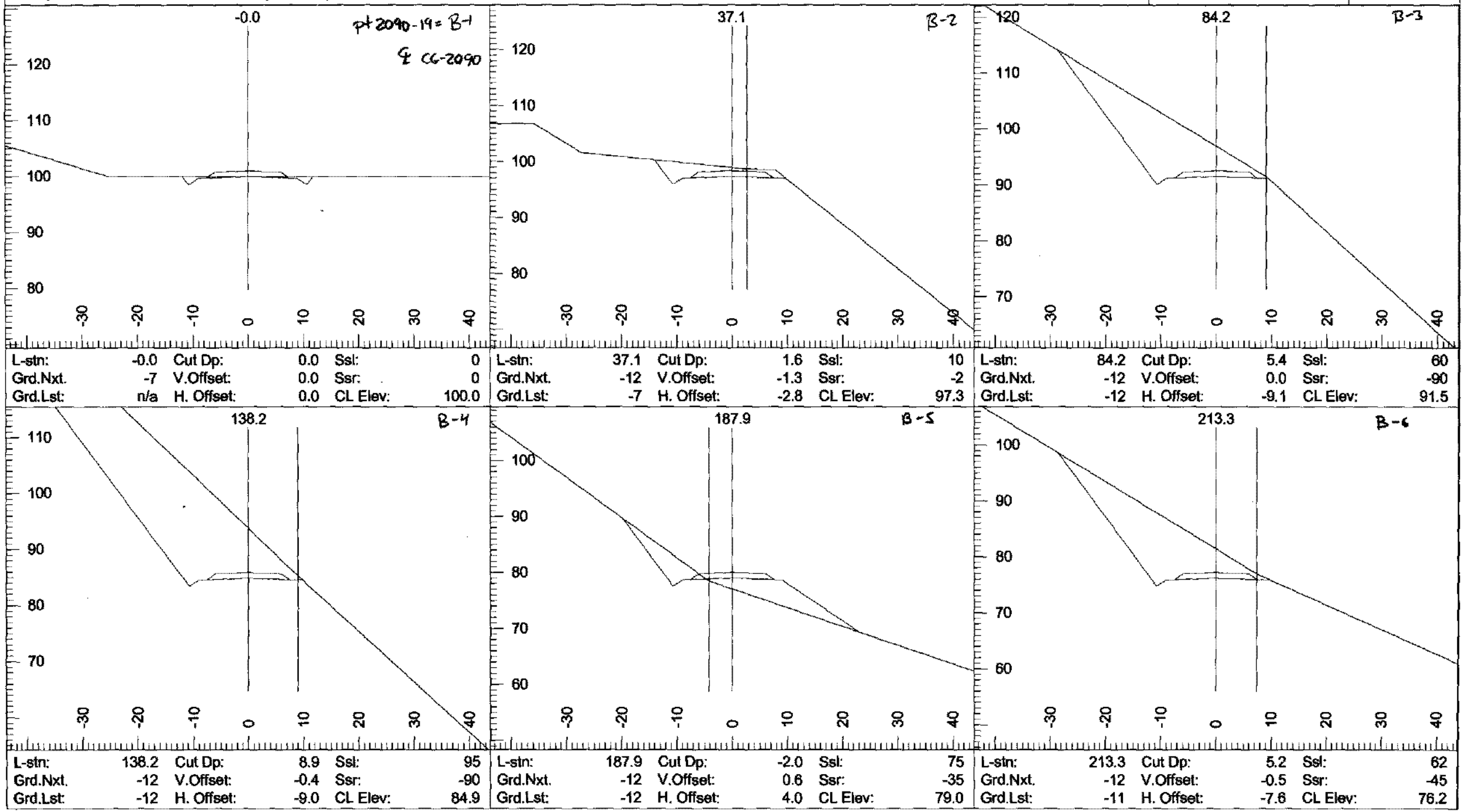
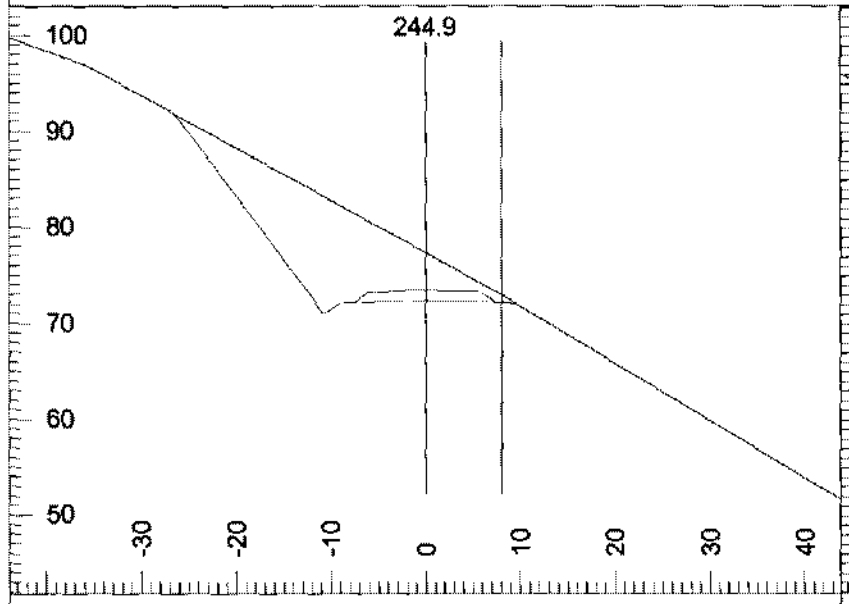
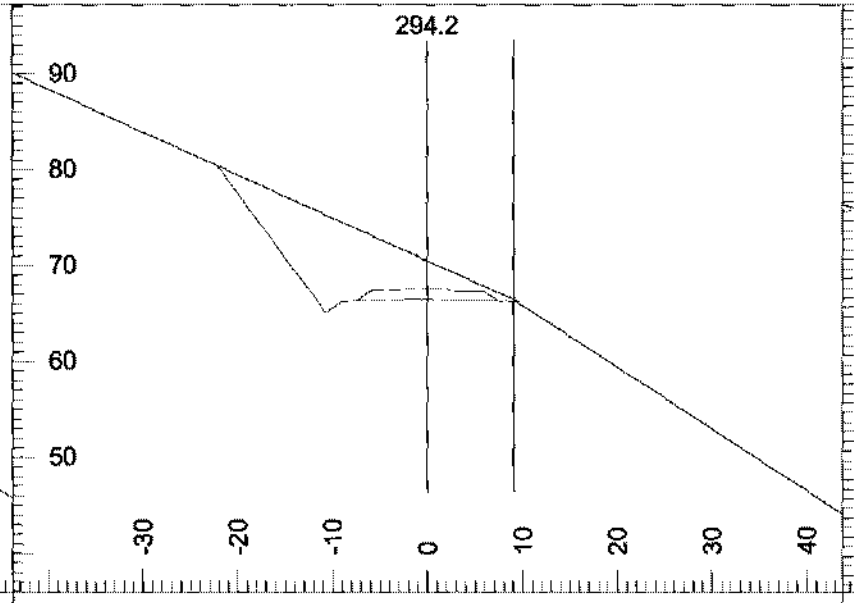


L-stn:	-0.0	Cut Dp:	0.0	Ssl:	0	L-stn:	37.1	Cut Dp:	1.6	Ssl:	10	L-stn:	84.2	Cut Dp:	5.4	Ssl:	60
Grd.Nxt.	-7	V.Offset:	0.0	Ssr:	0	Grd.Nxt.	-12	V.Offset:	-1.3	Ssr:	-2	Grd.Nxt.	-12	V.Offset:	0.0	Ssr:	-90
Grd.Lst:	n/a	H. Offset:	0.0	CL Elev:	100.0	Grd.Lst:	-7	H. Offset:	-2.8	CL Elev:	97.3	Grd.Lst:	-12	H. Offset:	-9.1	CL Elev:	91.5
L-stn:	138.2	Cut Dp:	8.9	Ssl:	95	L-stn:	187.9	Cut Dp:	-2.0	Ssl:	75	L-stn:	213.3	Cut Dp:	5.2	Ssl:	62
Grd.Nxt.	-12	V.Offset:	-0.4	Ssr:	-90	Grd.Nxt.	-12	V.Offset:	0.6	Ssr:	-35	Grd.Nxt.	-12	V.Offset:	-0.5	Ssr:	-45
Grd.Lst:	-12	H. Offset:	-9.0	CL Elev:	84.9	Grd.Lst:	-12	H. Offset:	4.0	CL Elev:	79.0	Grd.Lst:	-11	H. Offset:	-7.6	CL Elev:	76.2

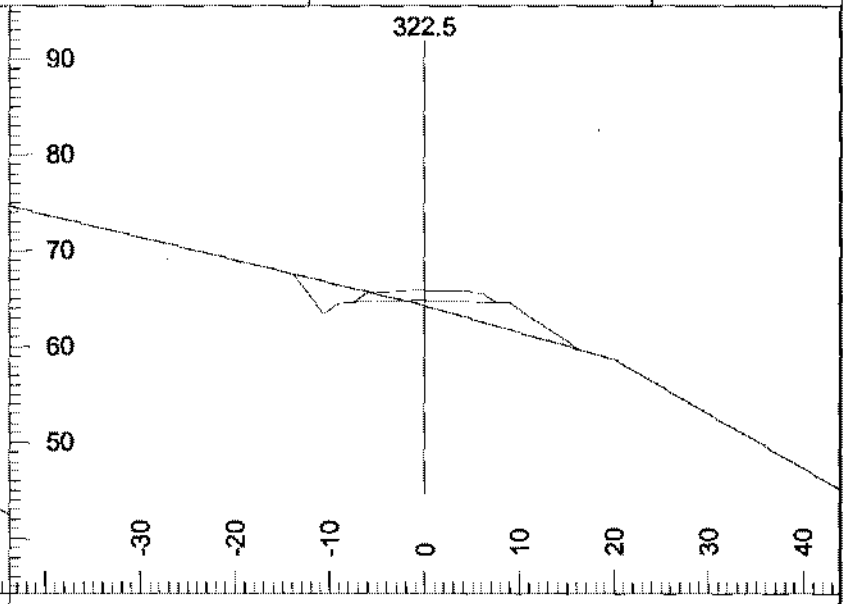
ROADENG Section									Scale 1:240				P. 2
D:\My Documents\Road Plans\Little Tiger\Rdeng\CG-2090B													06/01/21



L-stn:	244.9	Cut Dp:	5.0	Ssl:	55
Grd.Nxt.	-12	V.Offset:	-0.5	Ssr:	-60
Grd.Lst:	-12	H. Offset:	-8.1	CL Elev:	72.4



L-stn:	294.2	Cut Dp:	4.0	Ssl:	45
Grd.Nxt.	-12	V.Offset:	0.1	Ssr:	-65
Grd.Lst:	-12	H. Offset:	-9.2	CL Elev:	66.6



L-stn:	322.5	Cut Dp:	-0.6	Ssl:	25
Grd.Nxt.	n/a	V.Offset:	0.6	Ssr:	-30
Grd.Lst:	-6	H. Offset:	0.0	CL Elev:	64.9

DEPARTMENT OF NATURAL RESOURCES - PACIFIC CASCADE REGION

FORM 9-87(Rev. 12-04)

SUMMARY - Road Development Costs

DISTRICT: Yacolt

SALE/PROJECT NAME: Little Tiger Thinning CONTRACT NUMBER: 30-078638

LEGAL DESCRIPTION: Sections 2,11,12,13,14,& 15, T3N R6E
Sections 7,8,17 & 18, T3N R7E

	Pre-Haul	Reconstruction	Construction
ROAD NUMBER:	CG-2002 CG-2050 CG-2060 CG-2070 CG-2080 CG-2090	CG-2002 Ext&A	Spur A
ROAD STANDARD:	Mainline (12-16' R.S.)	Spur road (10' R.S.)	Spur road (10' R.S.)
NUMBER OF STATIONS:	264.00	293.73	171.26
SIDESLOPE:	0	0	1
CLEARING AND GRUBBING:	$865	$15,526	$16,069
EXCAVATION AND FILL:	$5,774	$29,306	$109,627
ROCK TOTALS (Cu. Yds.):			
Ballast: 29166	$21,977	$110,639	$75,235
Surface: 100	$0	$416	$0
Riprap: 256	$0	$1,297	$84
29,522			
CULVERTS AND FLUMES:	$460	$58,091	$11,232
STRUCTURES:	$0	$10,800	$0
GENERAL EXPENSES:	$2,617	$18,246	$16,980
MOBILIZATION:	$1,233	$1,233	$1,233
R.U.P.	$0	$0	$0
TOTAL COSTS:	$32,926	$245,554	$230,461
COST PER STATION:	$125	$836	$1,346

NOTE: This appraisal has no allowance for profit and risk.

TOTAL (All Roads) = $508,941

SALE VOLUME MBF = **3,300** from cruise

TOTAL COST PER MBF = $154.22

Plans to be furnished by:

Plan only: STATE

Plan-profile: Spur A
CG-2080B
CG-2080D
CG-2080E
CG-2090A
CG-2090B

Compiled by: Jim English Date: 03/01/06

Checked by: _____ Date: _____

Region Engineer: _____ Date: _____

Div of Engr.: _____ Date: _____

REMARKS: _____

PACIFIC CASCADE REGION - ROAD COST ESTIMATE

SALE NAME: Little Tiger Thinning CONTRACT NUMBER: 30-078638

I. GRADING AND SHAPING:

	Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
CG-2002		0%	NA	1.00	1.00	$7.0	1.00	28.51	$200
CG-2050		0%	NA	1.00	1.00	$7.0	1.00	58.08	$407
CG-2050	Reconst	0%	NA	1.00	1.00	$10.0	1.00	2.11	$21
CG-2060		0%	NA	1.00	1.00	$5.0	1.00	21.12	$106
CG-2070		0%	NA	1.00	1.00	$5.0	1.00	26.40	$132
CG-2080		0%	NA	1.00	1.00	$5.0	1.00	32.74	$164
CG-2090		0%	NA	1.00	1.00	$5.0	1.00	95.04	$475
								264.00	

Grading and Shaping TOTAL = $865

II. EXCAVATION:

	Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
CG-2002		20%	1.00	2.00	$0.0	1.00	28.51	$0
CG-2050		35%	1.00	3.00	$0	1.00	58.08	$0
CG-2050 Reconst.		40%	1.00	4.25	$48	1.00	2.11	$431
CG-2060		15%	1.00	1.75	$0	1.00	21.12	$0
CG-2070		15%	1.00	1.75	$0	1.00	26.40	$0
CG-2080		25%	1.00	2.25	$4.0	1.00	32.74	$131
CG-2090		35%	1.00	3.00	$4.0	1.00	95.04	$1,140
							264.00	$1,702

*End Haul, Over Haul, Large Fills/Cuts	Estimated Vol. (cy)	No. of Equip. Days	Cost/day	Sub Total
End Haul/ Over Haul	796	0.88	$2,680	$2,369
Large Fills/ Cuts	0	0.0	$2,680	$0
Grade & Shape		0	$1,000	$0

Excavation TOTAL = $5,774

III. BALLAST AND SURFACING :

Ballast source: CG-2002
Surface source: CG-2060
Riprap source : CG-2002

Description	cu.yds/sta	x stations	= cubic yards
Pitrun	2.11	70.00	148
Pitrun	32.74	40	1,309
Pitrun	52.80	33.00	1,742
Riprap			

UNIT COSTS	Pitrun	Stockpile	Riprap
Drill & Shoot	$2.25		$2.25
Dig and load	$1.00	$0.75	$1.00
Crushing			
Purchase			
Haul *	$2.37	$1.78	$2.37
Spread	$0.80	$0.45	
Compact	$0.45		
Strip			
Reclamation			
TOTAL ($/cy)	$6.87	$2.98	$5.62

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

R.T. Miles = 5.04
Ave. Speed = 25
Delay (Hrs.)= 0.2
Cost / Hour = $65.00
CY / Load = 11

Pitrun	3199	Cu. yds @	$6.87 /cu. yd =	$21,977
Pitrun		Cu. yds @	$2.98 /cu. yd =	$0
Riprap	0.0	Cu. yds @	$5.62 /cu. yd =	$0

Rock total = $21,977

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter	No/Length	Installed Cost/ft	Sub-total
	1	16	18	40	$11.25	$450
	0	14	24	0	$16.70	$0
Bands & Gaskets			1 - 18"@$9.90ea			$9.90

Culvert total = $460

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					$0

Structure total = $0

Sub-TOTAL = $29,076

VI. GENERAL EXPENSES: Overhead & General Exp. Add 9% $2,617

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	100	4.0	$400
Grader	160	1.0	$160
Compactor	400	1.0	$400
Excavator	450	2.0	$900
Dozer (D8)	400	2.0	$800
Front end loader	400	1.0	$400
Rock Drill	$400	1.0	$400
Dozer (D5)	$240	1.0	$240
Crusher		1.0	$0

Total Mobilization = $3,700 Mobilization sub-total = $1,233

	rd value	rd miles	mbf		
Easement / R.U.P.	$0	0.0	3,300	$0	R.U.P. sub-total = $0.00

Road No. CG-2002
Standard: Mainline (12-16' R.S.)
Stations: 109.82 $299.80

SHEET TOTAL = $32,926

By: Jim English Sheet 2 of 4 Date: 01/27/06

PACIFIC CASCADE REGION - ROAD COST ESTIMATE

SALE NAME: Little Tiger Thinning CONTRACT NUMBER: 30-078638

I. CLEARING AND GRUBBING:

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
CG-2002 Ext&A	20%	22	1.00	2.77	$32	0.80	27.51	$1,951
CG-2050	40%	22	1.00	4.29	$16	0.80	26.84	$1,474
CG-2050A	15%	22	1.00	2.46	$12	0.80	23.14	$546
CG-2070	15%	22	1.00	2.46	$12	1.00	93.16	$2,750
CG-2071	15%	22	1.00	2.46	$16	1.00	44.06	$1,734
CG-2072	15%	22	1.00	2.46	$12	1.00	5.72	$169
CG-2080	25%	22	1.00	3.33	$28	1.00	59.53	$5,551
CG-2090	35%	22	1.00	4.09	$24	1.00	13.77	$1,352
						Total	293.73	

Clear and Grub TOTAL = $15,526

II. EXCAVATION:

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
CG-2002 Ext&A	20%	1.00	2.00	$66	0.50	27.51	$1,816
CG-2050	40%	1.00	4.25	$66	0.50	26.84	$3,764
CG-2050A	15%	1.00	1.75	$48	0.50	23.14	$972
CG-2070	15%	1.00	1.75	$44	0.50	93.16	$3,587
CG-2071	15%	1.00	1.75	$44	0.50	44.06	$1,696
CG-2072	15%	1.00	1.75	$40	0.50	5.72	$200
CG-2080	25%	1.20	2.25	$66	0.50	59.53	$5,304
CG-2090	35%	1.00	3.00	$66	0.50	13.77	$1,363
					Total	293.73	$18,702

*End Haul, Over Haul, Large Fills/Cuts		Production	Estimated Vol. (cy)	No. of Equip. Days	Cost/day	Sub Total
Abandonment/Deactivate	77.49	18 sta/day		4.28	$1,104	$4,723
End Haul/ Over Haul		800 cy/day	800	1.00	$3,720	$3,720
Large Fills/ Cuts		500 cy/day	500	1.00	$2,160	$2,160

Excavation TOTAL = $29,306 44,832 stocpile

III. BALLAST AND SURFACING :

Ballast source: CG-2002 54
Surface source: CG-2060
Riprap source : CG-2002

Description	cu.yds/sta	x stations	= cubic yards
Ballast (Pitrun)	30-46	75.52	3,104
Ballast (Pitrun)	54	218.21	11,783
Surfacing(2.5")			100
Riprap			186
Turnouts/Landg	6 T.O. s	7 lndgs	674
stream material			56

UNIT COSTS	Ballast	Surfacing	Riprap
Drill & Shoot	$2.50		$2.00
Dig and load	$1.00	$0.55	$1.00
Crushing			
Purchase			
Haul *	$2.36	$2.36	$2.36
Spread	$0.80	$0.80	
Compact	$0.45	$0.45	
Strip			
Reclamation			
TOTAL ($/cy)	$7.11	$4.16	$5.36

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

R.T. Miles = 4.98
Ave. Speed = 25
Delay (Hrs.)= 0.2
Cost / Hour = $65.00
CY / Load = 11

Ballast (Pitrun)	15561	Cu. yds @	$7.11	/cu. yd = $110,639
Surfacing(2.5")	100	Cu. yds @	$4.16	/cu. yd = $416
Riprap	242	Cu. yds @	$5.36	/cu. yd = $1,297

Rock total = $112,352

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	No/Length (ft)	Installed Cost/ft	Sub-total
	36	16	18	1130	$11.25	$12,713
	3	14	24	152	$16.70	$7,615
	3	14	30	170	$24.35	$12,419
	2	14	36	90	$32.00	$5,760
	2	14	42	92	$45.15	$8,308
	1	10	96	50	$210.00	$10,500

Bands & Gaskets 11 - 36@$9.90ea, 3 -24" @ $13.20 ea.,2 - 36" @ $24.15 ea,1- 96" @ $194.00 ea $777

Culvert total = $58,091

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
40' Bridge	Load $550 Haul 135 mi. 6.5 hrs $650				$1,200
54' bridge	disassemble 8 hrs $400, load $1000,				$1,400
	haul with 2 trucks 3.5 hrs ea.				$700
Abutments	reinforced concrete	see detail	18-20'	$1,500.00	$3,000
Crane					$2,500
backwalls and sills					$2,000

Structure total = $10,800

Sub-TOTAL = $228,075

VI. GENERAL EXPENSES: Overhead & General Exp. Add 8% $18,246

VII. MOBILIZATION:

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	$100	4.0	$400
Grader	$160	1.0	$160
Compactor	$400	1.0	$400
Excavator	$450	2.0	$900
Dozer (D8)	$400	2.0	$800
Front end loader	$400	1.0	$400
Rock Drill	$400	1.0	$400
Dozer (D5)	$240	1.0	$240
Crusher	$0	1.0	$0

* Move in costs are averaged over all three sheets.

Total Mobilization = $3,700 Mobilization sub-total = $1,233

	rd value	rd miles	mbf		
Easement / R.U.P.	$60,000		3,300	$0	R.U.P. sub-total = $0.00

Road No. CG-2002 Ext&A
Standard: Spur road (10' R.S.)
Stations: 214.71 $1,153

SHEET TOTAL = $247,554

By: Jim English Sheet 3 of 4 Date: 01/27/06

PACIFIC CASCADE REGION - ROAD COST ESTIMATE

SALE NAME: Little Tiger Thinning CONTRACT NUMBER: 30-078638

I. CLEARING AND GRUBBING:

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
Spur A	55%	33	1.00	5.42	$32	0.80	4.00	$555
Spur A	10%	33	1.00	2.15	$32	0.80	8.35	$460
Spur B	25%	33	1.00	3.33	$32	0.80	14.34	$1,222
2050B&C	25%	33	1.00	3.33	$32	0.80	8.96	$764
2070spurs	25%	33	1.00	3.33	$32	0.80	30.50	$2,600
CG-2071	25%	33	1.00	3.33	$32	0.80	16.91	$1,442
2080spurs	25%	33	1.00	3.33	$32	0.80	45.51	$3,880
2080 FB	55%	33	1.00	5.42	$32	0.80	19.90	$2,761
2090spurs	35%	33	1.00	4.09	$32	0.80	22.79	$2,386
							171.26	

Clear and Grub TOTAL = $16,069

II. EXCAVATION:

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
Spur A	55%	1.00	8.00	$66	0.50	4.00	$1,056
Spur A	10%	1.00	1.50	$66	0.50	8.35	$413
Spur B	25%	1.00	2.25	$66	0.50	14.34	$1,065
2050B&C	25%	1.00	2.25	$66	0.50	8.96	$665
2070spurs	25%	1.00	2.25	$66	0.50	30.50	$2,265
CG-2071	25%	1.00	2.25	$66	0.50	16.91	$1,256
2080spurs	25%	1.00	2.25	$66	0.50	45.51	$3,379
2080 FB	55%	1.00	8.00	$66	0.50	19.90	$5,254
2090spurs	35%	1.00	3.00	$66	0.50	22.79	$2,256
						171.26	

*End Haul, Over Haul, Large Fills/Cuts		Production	Estimated Vol. (cy)	No. of Equip. Days	Cost/day	Sub Total
Abandonment/ Deactivate	171.26	18 sta/day		9.51	1104.00	$10,504
End Haul/ Over Haul		950 cy/day	19835	20.88	$3,720	$77,670
Large Fills/ Cuts		500 cy/day	890	1.78	$2,160	$3,845

Excavation TOTAL = $109,627

III. BALLAST AND SURFACING :

Ballast source: CG-2002
Surface source: CG-2060
Riprap source : CG-2002

Description	cu.yds/sta	x stations	= cubic yards
Ballast (pitrun)	54	171.26	9,256
Ballast (jawrun)			0
Riprap			14
Turnouts/Landg	0 T.O.s	23 lndg.s	1,150

UNIT COSTS	Ballast	Surfacing	Riprap
Drill & Shoot	$2.25		$2.25
Dig and load	$1.00		$1.00
Crushing			
Purchase			
Haul *	$2.73	$2.73	$2.73
Spread	$0.80	$0.80	
Compact	$0.45	$0.45	
Strip			
Reclamation			
TOTAL ($/cy)	$7.23	$3.98	$5.98

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

R.T. Miles =	6.55					
Ave. Speed =	25	Ballast (pitrun)	10406	Cu. yds @	$7.23 /cu. yd =	$75,235
Delay (Hrs.)=	0.2	Ballast (jawrun)	0	Cu. yds @	$3.98 /cu. yd =	$0
Cost / Hour =	$65.00	Riprap	14.0	Cu. yds @	$5.98 /cu. yd =	$84
CY / Load =	11					

Rock total = $75,319

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	No/Length (ft)	Installed Cost/ft	Sub-total
	19	16	18	576	$11.25	$6,480
	1	12	66	48	$93.25	$4,476
Bands & Gaskets			19 - 18"@$9.90ea			$276

Culvert total = $11,232

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					$0

Structure total = $0

Sub-TOTAL = $212,248

VI. GENERAL EXPENSES: Overhead & General Exp. Add 8% $16,980

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	100	4.0	$400
Grader	160	1.0	$160
Compactor	400	1.0	$400
Excavator	450	2.0	$900
Dozer (D8)	400	2.0	$800
Front end loader	400	1.0	$400
Rock Drill	$400	1.0	$400
Dozer (D5)	$240	1.0	$240
Crusher	$0	1.0	$0

Total Mobilization = $3,700 Mobilization sub-total = $1,233

	rd value	rd miles	mbf		
Easement / R.U.P	$0	0.0	3,300	$0	R.U.P. sub-total = $0.00

Road No. CG-2002 Ext&A
Standard: Spur road (10' R.S.)
Stations: 128.57 $1,792

SHEET TOTAL = $230,461

By: Jim English Sheet 4 of 4 Date: 01/27/06